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EDITED BY  
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FELLOW OF THE COLLEGE OF PHYSICIANS OF PHILADELPHIA; PRESIDENT OF  
THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA; MEMBER OF THE AMERICAN  
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## TO READERS AND CORRESPONDENTS.

In the numbers of this Journal for July and October last a summary was given of some carefully made and interesting investigations relative to the action and uses of conium and hyoscyamus, and on the combined operation of opium and belladonna. By some unaccountable mistake, these researches were ascribed to Dr. *George* Harley instead of Dr. JOHN HARLEY. We call especial attention to this error, in order that our readers may award the credit of these important investigations to their true author.

Several bibliographical notices in type for this number have been unavoidably postponed.

All articles intended for the *Original Department* of this Journal must be contributed for publication to it *exclusively*. As original articles are *accepted only on this condition*, we consider those who favour us with contributions to be bound in honour to conform to it.

Contributors who wish their articles to appear in the next number, should forward them before the 1st of February.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are required. A *limited* number of extra copies will be furnished to authors, *if the request for them be made when the communication is sent*.

The following works have been received:—

Klinik der Ohrenkrankheiten. Ein Handbuch für Studierende und Aerzte. Von Dr. S. Moos, praktischer Arzt und Docent an der Universität in Heidelberg. Mit 26 in den Text gedruckten Holzschnitten. Wien: Wilhelm Braumüller, 1866.

Klinische Studien über die Behandlung des Abdominaltyphus mittelst des kalten Wassers. Nach dem Material der medicinischen Abtheilung des akademischen Hospitals zu Kiel. Von Dr. THEODOR JÜRGENSEN, Privatdocenten an der Universität und erstem Assistenzarzte der med. Klinik. Leipzig: F. C. W. Vogel, 1866.

Aus der medicinischen Klinik zu Basel. Beobachtungen und Versuche über die Anwendung des kalten Wassers bei fieberhaften Krankheiten. Von Dr. C. LIEBERMEISTER, o. ö. Prof. der Pathol. und Therap., Director der med. Klinik, und Dr. E. HOGENBACH, früherem Assistenzarzt der med. Klinik in Basel. Leipzig: F. C. W. Vogel, 1868.

Thèse de Pharmacie présentée et soutenue à l'Ecole Supérieure de Pharmacie par ARMAND FUMORZE, Doc. en Méd.-Pharm. de 1re Classe, Mem. de la Soc. Entomol. de France et de la Soc. Chim. de Paris. De la Cantharide Officinale. Paris: Chez Germer Baillière, 1867.

Medico-Chirurgical Transactions. Published by the Royal Medical and Chirurgical Society of London. Vol. LI. London: Longmans, Green & Co., 1868.

St. Andrew's Medical Graduates' Association. Transactions, 1867. Edited by LEONARD W. SEDGWICK, M. D., Hon. Sec. London: John Churchill & Sons, 1868.

Saint Bartholomew's Hospital Reports. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. IV. London: Longmans, Green & Co., 1868.

A Handbook of Uterine Therapeutics, and of Diseases of Women. By EDWARD JOHN TILT, M. D., M. R. C. P., Consulting Surg. to Farringdon General Disp., Fell. Royal Med. and Chirurg. Soc., etc. Third edition. London: John Churchill & Sons, 1868.

An Improved Method of Extraction of Cataract, with Results of 107 Operations. By J. R. WOLFE, M. D., etc. London: John Churchill & Sons, 1868.

On Varicose Disease of the Lower Extremities and its Allied Disorders, Skin Discoloration, Induration, and Ulcer: being the Lettsomian Lectures delivered before the Medical Society of London in 1867. By JOHN GAY, F. R. C. S., Surgeon to the Great Northern Hospital, etc. etc. London: John Churchill & Sons, 1868.

The Mechanical Treatment of Deformities of the Mouth, Congenital and Accidental. By ROBERT RAMSAY, Mem. of Odont. Soc., etc., and JAMES OAKLEY COLES, Hon. Dent. to Hosp. for Dis. of Throat, Golden Square. London: John Churchill & Sons, 1868.

On the Parasitic Affections of the Skin. By DR. McCALL ANDERSON, Lecturer on Prac. of Med. in Anderson's University, Physician to Dispensary for Skin Diseases, etc., Glasgow. Second edition. London: John Churchill & Sons, 1868.

A Manual of the Diseases of the Eye. By C. MACNAMARA, Surgeon to the Calcutta Ophthalmic Hospital, Prof. of Ophthalmic Medicine and Surgery in the Calcutta Med. College. London: John Churchill & Sons, 1868.

Cases of Disease of the Nervous System in Patients the Subjects of Inherited Syphilis. By J. HUGHLINGS-JACKSON, M.D., F.R.C.P. Lond.: John Churchill & Sons, 1868.

On the Results of the Operations for Cicatrices after Burns. By J. H. JAMES, F.R.C.S., etc. etc. London: John Churchill & Sons, 1868.

A Dictionary of Materia Medica and Therapeutics. By ADOLPHE WAHLTUCH, M.D., L.R.C.C.P. Lond., etc. etc. London: John Churchill & Sons, 1868.

On the Action of the Cobra Poison. By CHARLES R. FRANCIS, M.B. London.

The Lingual Membrane of Mollusca, and its Value in Classification. By JABEZ HOGG, F.L.S., Hon. Sec. R.M.S., etc.

Outlines of Physiology, Human and Comparative. By JOHN MARSHALL, F.R.S., Prof. of Surgery in Univ. Coll., London; Surgeon to Univ. Coll. Hospital. With Additions by FRANCIS G. SMITH, M.D., Prof. of Institutes of Med. in University of Pennsylvania. Illustrated by numerous wood-cuts. Philadelphia: Henry C. Lea, 1868.

A Treatise on the Principles and Practice of Medicine; designed for the use of Practitioners and Students of Medicine. By AUSTIN FLINT, M.D., Prof. of the Prin. and Prac. of Med. in the Bellevue Hospital Med. Coll., Fell. of N.Y. Acad. of Med., etc. etc. Third edition, thoroughly revised. Philadelphia: Henry C. Lea, 1868.

Atlas of Venereal Diseases. By M. A. CULLERIER, Surg. to Hôpital du Midi, Mem. of Surg. Society of Paris, Chev. of Légion d'Honneur, etc. Translated from the French, with Notes and Additions, by FREEMAN J. BUNSTEAD, M.D., Prof. of Venereal Diseases in Coll. of Phys. and Surg. New York, etc. With one hundred and forty-five beautifully coloured figures, on twenty-six plates. Philadelphia: Henry C. Lea, 1868.

Lectures on the Study of Fever. By ALFRED HUDSON, M.D., M.R.I.A., Physician to the Meath Hospital. Philadelphia: Henry C. Lea, 1869.

The Medical Formulary: being a Collection of Prescriptions, etc. etc. To which is added an Appendix, on the Endermic Use of Medicines, and on the Use of Ether and Chloroform. By BENJAMIN ELLIS, M.D., late Prof. of Mat. Med. and Pharmacy in the Phila. Coll. of Pharmacy. Twelfth edition, carefully revised and much improved by ALBERT H. SMITH, M.D., F.R.C.P. Phila., Lecturer on Obstetrics to the Philadelphia Lying-in Charity, etc. Philadelphia: Henry C. Lea, 1868.

Outlines of Comparative Anatomy and Medical Zoology. By HARRISON ALLEN, M.D., Prof. of Zoology and Comparative Anatomy in the University of Pennsylvania. Philadelphia: J. B. Lippincott & Co., 1869.

Retinitis Nyctalopica. By Prof. DR. ARLT, of Vienna. From "Der Bericht über die Augenklinik." Translated, with consent of the Author, by J. F. WEIGHTMAN, M.D., of Philadelphia. Philadelphia: Lindsay & Blakiston, 1868.

The Science and Practice of Medicine. By WILLIAM AITKEN, M.D. Edin., Prof. of Pathology in the Army Medical School. Second American, from the fifth enlarged and carefully revised London edition, adopting the new nomenclature of the Royal Coll. of Phys. of Lond. With large additions, by MEREDITH CLYMER, M.D., ex-Prof. of Instit. and Prac. of Med. in the Univ. of New York, formerly Phys. to the Phila. Hospital, etc. etc. In two volumes. With a map, lithographic plate, and numerous illustrations on wood. Vol. II. Philadelphia: Lindsay & Blakiston, 1868.

Clinical Lectures on Diseases of the Liver, Jaundice, and Abdominal Dropsy. By CHARLES MURCHISON, M.D., F.R.S., etc. New York: William Wood & Co., 1868.

Practical Observations on the Etiology, Pathology, Diagnosis, and Treatment of Anal Fissure. By WILLIAM BODENHAMER, A.M., M.D., Prof. of Diseases, Injuries, and Malformations of the Rectum, Anus, and Genito-Urinary Organs. Illustrated by numerous cases and drawings. New York: William Wood & Co., 1868.

Recherches Expérimentales sur une Nouvelle Fonction du Foie, consistant dans la séparation de la Cholestérine du Sang et son élimination sous forme de Stercorine (Séroline de Boudet). Par AUSTIN FLINT fils, Docteur en Médecine, Prof. de Physiologie et de Microscopie au Collège de Médecine de Bellevue-Hospital à New York, etc. Paris: Germer Baillière. New York: D. Appleton & Co., 1868.

The Opium Habit, with Suggestions as to the Remedy. New York: Harper & Bros., 1868.

A Treatise on Physiology and Hygiene; for Schools, Families, and Colleges. By J. C. DALTON, M. D., Prof. of Physiology in the College of Physicians and Surgeons, New York. With illustrations. New York: Harper & Bros., 1868.

Two Cases of Oesophagotomy for the Removal of Foreign Bodies: with a History of the Operation. Second edition, revised, with an additional case, by DAVID W. CHEEVER, M. D., Adj. Prof. of Clinical Surgery in Harvard University, Surgeon to Boston City Hospital. Boston: James Campbell, 1868.

An Inquiry into the Influence of Anthracite Fires upon Health; with Remarks upon Artificial Moisture, and the best Modes of Warming Houses. By GEORGE DERRY, M. D., University Lecturer on Hygiene in Harvard University, etc. Second edition, enlarged. Boston: A. Williams & Co., 1868.

Remarks on the Etiology of Congenital Deaf-Mutism, made before the New York Academy of Medicine, February, 1868. By D. B. ST. JOHN ROOSA, M. D., Prof. of Diseases of the Eye and Ear in the University of New York. New York, 1868.

The Physiological and Therapeutical Effects of Compressed Air Baths. By CHARLES A. LEE, M. D., Prof. of Mat. Med., Hygiene, etc. Buffalo, 1868.

Official Army Register for August, 1868. Adjutant-General's Office, Washington.

Annual Report of the Surgeon-General U. S. A. 1868.

Report on Cerebro-Spinal Meningitis. Read before the Ohio State Medical Society. By ISAAC KAY, M. D., of Springfield, Ohio. Cincinnati, 1868.

Transactions of the American Medical Association. Vol. XIX. Philadelphia, 1868.

Transactions of the Eighteenth Anniversary Meeting of the Illinois State Medical Society, held in Quincy, May 19 and 20, 1868. Chicago, 1868.

Bulletin of the New York Academy of Medicine. Vol. III., Nos. 17 to 20.

Transactions of the Twenty-third Annual Meeting of the Ohio State Medical Society, held at Delaware, June 2, 3, and 4, 1868. Cincinnati, 1868.

Transactions of the Medical Society of New Jersey. 1868. Newark, N. J., 1868.

Report of the Proceedings of the Association of Medical Superintendents of American Institutions for the Insane, at their Twenty-second Annual Meeting, held at Boston, Mass., on the 2d, 3d, 4th, and 5th days of June, 1868. Harrisburg, 1868.

Annual Report of the City Registrar, comprising Return of Deaths, with a Classification of the Disease, Age, Sex, Status, and Nativity of each case, for the year ending December 31, 1867. Charleston, 1868.

Thirty-second Annual Report of the Officers of the Vermont Asylum for the Insane, August, 1868. Brattleboro, 1868.

List of Medical Officers, United States Army, with their Stations, as reported to the Surgeon-General of the Army, October 1, 1868.

Introductory Address delivered before the Class of the National Medical College of the District of Columbia, for the Session of 1868-69. By ALEXANDER Y. P. GARNETT, M. D., Prof. of Clinical Medicine. Washington City, 1868.

Introductory Lecture to the Students of the Medical School of Harvard University, Wednesday, Nov. 4, 1868. By CHARLES E. BUCKINGHAM, M. D., Prof. of Obstetrics and Med. Jurisprudence. Boston, 1868.

Introductory Address to the Ninth Annual Course of Lectures in the Miami Medical College, of Cincinnati, delivered October 7, 1868. By E. B. STEVENS, M. D., Prof. of Mat. Medica and Therapeutics. Cincinnati, 1868.

Ohio State Medical Society. Annual Address of the retiring President, EDWARD B. STEVENS, M. D., Prof. of Mat. Med. in Miami Med. Coll., of Cincinnati. Cin., 1868.

Introductory Address delivered before the Class of the Medical College of Ohio, on October 6, 1868. By THEOPHILUS PARVIN, M. D., Prof. of Med. Diseases of Women. Cincinnati, 1868.

The following Journals have been received in exchange:—

Archiv der Heilkunde. 1868. Viertes und Sechstes Heft.

Vierteljahrsschrift für die Praktische Heilkunde. Jahrgang 1868. Vierter Band.

Deutsches Archiv für Klinische Medicin. Vierten Bandes fünftes und sechstes Heft. Fünften Bandes erstes Heft.

- Centralblatt für die Medicinischen Wissenschaften. Nos. 37, 40 to 52.  
 Archiv für Anatomie, Physiologie und Wissenschaftliche Medicin. Jahrgang 1868.  
 Heft III, IV.  
 Archives de Physiologie Normale et Pathologique. Novembre—Décembre, 1868.  
 Revue de Thérapeutique Médico-Chirurgicale. Nos. 18 to 23.  
 Annales de Dermatologie et de Syphilographie. Publiés par le Docteur A. Dorox.  
 Première Année, No. 1.  
 Giornale Italiano delle Malattie Veneree e delle Malattie della Pelle. Anno III.  
 Fascicoli 7, 8, 9, 10.  
 The British and Foreign Medico-Chirurgical Review. October, 1868.  
 The Medical Times and Gazette. October, November, December, 1868.  
 The British Medical Journal. October, November, December, 1868.  
 The Lancet. October, November, December, 1868.  
 The Practitioner. October, November, December, 1868.  
 The Journal of Anatomy and Physiology. November, 1868.  
 The Journal of Cutaneous Medicine and Diseases of the Skin. October, 1868.  
 Edinburgh Medical Journal. September, October, November, 1868.  
 Dublin Quarterly Journal of Medical Science. November, 1868.  
 Medical Press and Circular. October, November, December, 1868.  
 Canada Medical Journal. October, November, December, 1868.  
 The Provincial Medical Journal. October, 1868.  
 The Dominion Medical Journal. October, November, December, 1868.  
 The Boston Medical and Surgical Journal. October, November, December, 1868.  
 The American Journal of Insanity. October, 1868.  
 The New York Medical Journal. October, November, December, 1868.  
 The Medical Record. October, November, December, 1868.  
 The Quarterly Journal of Psychological Medicine and Medical Jurisprudence.  
 October, 1868.  
 The Buffalo Medical and Surgical Journal. September, October, November, 1868.  
 The Medical Gazette. October, November, December, 1868.  
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 The Cincinnati Lancet and Observer. October, November, December, 1868.  
 The Cincinnati Medical Repository. Oct., Nov., Dec., 1868. (August never received.)  
 The Western Journal of Medicine. October, November, December, 1868.  
 The Chicago Medical Examiner. Nov., Dec., 1868. (October never received.)  
 The Chicago Medical Journal. October, November, 1868.  
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 The Detroit Review of Medicine and Pharmacy. Sept., Oct., Nov., Dec., 1868.  
 The Humboldt Medical Archives. October, November, December, 1868.  
 The Leavenworth Medical Herald. October, November, December, 1868.  
 The Pacific Medical and Surgical Journal. September, October, November, 1868.  
 The California Medical Gazette. September, October, 1868.  
 The Richmond and Louisville Medical Journal. October, November, December, 1868.  
 The New Orleans Journal of Medicine. October, 1868.  
 The Nashville Journal of Medicine and Surgery. Oct., Nov., Dec., 1868.  
 The American Journal of Pharmacy. November, 1868.  
 The Druggists' Circular and Chemical Gazette. November, December, 1868.  
 The American Journal of Science and Arts. November, 1868.  
 The American Naturalist. October, November, 1868.  
 The Dental Cosmos. October, November, December, 1868.  
 The American Journal of Dental Science. October, November, December, 1868.  
 Revista Medico-Quirurgica y Dentistica. Octobre, 1868.

Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M.D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, London; or M. Hector Bossange, Lib. quai Voltaire, No. 11, Paris, will reach us safely and without delay.

All remittances of money and letters on the *business* of the *Journal* should be addressed *exclusively* to the publisher, Mr. H. C. Lea, No. 706 Sanson Street.

The advertisement sheet belongs to the business department of the *Journal*, and all communications for it must be made to the publisher.



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Atlas of Venereal Diseases. By M. A. Cullerier, Surgeon to the Hôpital du Midi, etc. Translated from the French, with notes and additions, by Freeman J. Bumstead, M. D., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York, etc. Royal 4to. pp. 328. Philadelphia: Henry C. Lea, 1868. . . . .	115
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ART. I.—*On Consciousness, and Cases of so-called Double Consciousness.* By SAMUEL JACKSON, M.D., Emeritus Professor of the Institutes of Medicine in the University of Pennsylvania, etc. etc.

THERE is no subject more interesting and important than the investigation of the psychical or intellectual and moral faculties of man, with their modes of action and the diversities which they manifest in different individuals. Upon an accurate knowledge of these subjects must depend, in a great measure, the progress of civilization and the establishment of a sound social system based upon moral principles. The attempts of numerous philosophers to treat this subject on metaphysical principles have proved utter failures. This necessarily results from the method which has been pursued. They have been limited to the contemplation of the workings of their own minds and of a limited number of associates. A certain amount of correct knowledge may be acquired in this manner, but the great varieties manifested in the numerous masses of individuals and races, and in the conditions of the intellect as instanced in mental affections and diseases, cannot be understood or comprehended from so small a field of observation.

This subject belongs properly to Biology, as much so as the functions of any other organ of the animal economy; and it must be studied in the same manner, by careful observation, accumulation, and analysis of the distinct moral and intellectual facts manifested in the actions of individuals. This knowledge is only to be obtained by studying intelligence wherever it appears—in the lower and higher animals, in persons of deficient intellect, in the insane, in criminals, and in those with some predominant idea, as well as the exceptional cases of superior intellects.

The nature and seat of consciousness are points as yet undetermined, and some light may probably be thrown upon this subject by the observation of the modifications that at times are detected in it under special circumstances. With this impression, I have been induced to report a few cases of what have been called alternations of consciousness.

CASE I.—This case occurred early in my practice. I was requested, in March, 1831, to see a young man, a clerk in a fashionable dry goods store, who had been attacked with convulsions. The history of the case was that he had been in Maryland on a visit, where he had been affected with a bilious remittent fever. He had previously been on a lowering diet for some time. He returned before his convalescence was confirmed, and resumed his occupation. Soon afterwards a large invoice of goods was received, the unpacking and arrangement of which he superintended, and experienced considerable fatigue from his labours. In the evening he was attacked with convulsions of a violent character, during which he was unconscious. In the course of twenty-four hours the convulsions were abated. He remained without any peculiar symptom, but in a state of great prostration, with occasional delirium, for two days. About the third day the attendants remarked that his mind was engaged, as it were, in the recital or narrative of imaginary scenes taking place in New York, where he supposed himself to be in company and holding conversations with, and finally paying particular attentions to, a lady. He imagined he had a rival for her favours, and entered into a quarrel that ended in a challenge and a duel. This was the outline of a complete novelette, with various adventures that are omitted, composed at periods of about half an hour each during three days, and it was observed that when the story was resumed it was in immediate connection with the part where it had ceased. The ladies of the family became interested, and were notified when the romance was continued.

During this period his eyes were open, and, to all appearances, he was awake and conscious; but when he would suddenly cease, and was asked what he had been doing, he insisted that he had been fast asleep. He was utterly unconscious of anything that had occurred. The ladies remarked his language was in refinement far above his natural discourse. In proportion as his nervous system became composed and his strength improved, this unnatural manifestation of consciousness disappeared. After a short time he went to the country to recruit, and ultimately regained his health.

CASE II.—In April, 1831, a young lady from Virginia was brought to this city and placed in my charge. She was from eighteen to twenty years of age, and had been for five years afflicted with a great variety of symptoms; she had had several attacks of autumnal fever; it might be said of her constitution that it was an organization in ruins, not a single function was in a normal condition. She was emaciated, and so much prostrated in strength that she could not get in or out of bed without assistance.



At the period when she came under my care she was daily subject to violent attacks of neuralgia and spasms, with disturbed consciousness, and at times delirium. The neuralgic pains frequently affected the right eye, and had produced amaurosis. So far as inspection could then be carried, the eye appeared to be perfect in structure. As an instance of the intensity of these attacks, I may mention one which occurred the week of her arrival in Philadelphia. The pain was so great that it crazed her. She was crying out with the torture, and insisted that the ball of the eye had been torn from its socket and a coal of fire substituted in its place. I had been accustomed to give relief in such cases by acupuncture at the seat of pain. I introduced from five to six needles around the eye, and in about ten or fifteen minutes the pain ceased, never to return in that organ.

At this time she had daily modifications of her consciousness, and suffered intensely with movable or flying pains, which seemed to make the circuit of the body in a few minutes; the motions were indicated by her grasping in succession the different parts that became affected, and terminated in seizing the throat with both hands, so as to endanger crushing the larynx. In this state her attendants had to watch her in order to prevent the clutching of the throat. This condition I controlled by the repeated use of the moxa on the back of the neck. As soon as the pain of the burn was felt, the spasm ceased.

In a few days the attacks of neuralgia and spasms were mitigated in intensity and diminished in frequency so that she would often be two or three days in a quiet condition. It was then I learned from the friend who attended her that there were times daily when she was not in her normal state of consciousness. This was shown by a difference in her character and actions. She was frequently in conversation with imaginary persons, and supposing circumstances and occurrences which had no existence. As an instance, I found her one day in great distress of mind, and shedding streams of tears. When I asked her friend what had occasioned this distress, I was informed that she insisted and complained I had given her a terrible scolding. She did not recognize or pay any attention to me, nor could I persuade her it was all a fallacy. It was sometimes difficult to distinguish the two different states, but the friend had one test on which she relied, and that was to ask her to sing. In the abnormal consciousness she did not hesitate, although she had an indifferent voice and no knowledge of music; but in her normal condition no inducements could prevail upon her to make the attempt.

As the intensity of the nervous attacks diminished, these accessions were less frequent and of shorter duration. After the spasms and neuralgic attacks were got under control, the disturbed manifestations of consciousness disappeared.

This is not a very striking case, but it appears to me to be an example of the modifications to which consciousness is subject.

CASE III.—A young lady was brought by her mother to this city, to consult me respecting her case. She was from fifteen to sixteen years of age, in apparent perfect health, her organization fully developed for that time of life, and the organic functions in their natural condition. The affection was entirely mental, consisting in daily alternations in consciousness. In these alternations the present was completely lost; her whole attention was given to those absent friends with whom she was engaged in imaginary talk. From being of her natural character and disposition, she would suddenly change, and enter into conversations with her companions and friends at home. She laboured under great depression, but no excitement. On my second visit, I found her in the abnormal condition. She was holding conversations with her acquaintances in her native place (300 miles distant), but suddenly ceased and entered into a soliloquy which was a lamentation of her fate—"Alas, that one so young should so early in life have all her prospects blasted!" Her mother then informed me of the cause that brought on her present condition. She had been placed at a boarding-school some little distance from her home, and had an attack of fever there. She was attended by a physician beyond the middle period of life, who was very attentive throughout her illness and convalescence. Her grateful feelings were such as to become a devoted affection, which she could not control, and too openly manifested. In consequence, her parents removed her from the school. This separation did not produce the effect that was anticipated, but she sank into a condition of depression and melancholy which gradually terminated in the mental state just described. She had been under medical treatment without benefit for some time, and was then brought to me. I was convinced, from the perfect condition of her health, that the disturbance was purely mental, and not excited by any organic disease. I could expect nothing from medicine; the remedy must be of a moral character. The circumstances in which she was placed here embarrassed me in devising such a treatment; they were alone, with few or no acquaintances, and the religious feelings of her mother and those in which she had been brought up would not permit them to resort to the theatre or other public amusements which I have found effectual in cases of moral affections.

I advised a visit to Cape May, as it was in the height of the season, but they returned without any benefit derived from it. They were of an English family, and I inquired if they had not relatives in England, and at once proposed they should make a visit there, giving them a full assurance that she would return perfectly well. Arrangements were made with the family at home to carry out this plan, and in less than two weeks they set sail on their projected voyage. About four months afterwards she returned in a perfect state of health both of mind and body.

CASE IV.—In September, 1842, I was requested to see a young lady who had been a patient of mine when about four or five years old. She

had no special form of disease at that time, but a constitution not fairly developed; it might be said, an organism wanting the last finish. I was informed that she had been, when very young, reduced to a low state by a chronic diarrhœa, which was considered as the cause of her feeble condition. Her temperament was the nervous lymphatic; very sensitive, the nervous system easily disordered, the muscles small and soft, and the ligamentous structure of the joints so flaccid as to require the support of irons, which she continued to wear up to the age of twelve or thirteen. I had her taken from school, put under the best regimen, with tonics and regulated exercise.

At the time first stated, she was between fourteen and fifteen years old, with no decided disease. During the preceding summer she had been in the country, and, while there, lost all desire for food, which was at first attributed to the diet not being suited to her palate. At this time she had lost her sense of taste and hunger. The saliva was always acid to such an extent as to injure the teeth. I was doubtful as to her incapacity for eating, and insisted that she could accomplish it upon a fair trial. She told me she would do anything to oblige me, and consented to make the effort. Some food was brought, consisting of potatoes and meat. She took a portion, masticated it for some minutes, and made some ineffectual efforts to swallow the bolus. She finally, by the handle of the fork and her fingers, pushed it as far as she could into the fauces; there it rested. The automatic actions of deglutition were not excited into action. I then inquired what were her feelings. She assured me that the constant sensation was that she had eaten till she was full up to the throat. This sensation explained the impotence of the involuntary automatic muscles of deglutition. She was in the habit of masticating various articles of food, and of swallowing the saliva, but rejecting the material. Her chief subsistence was fluids, principally Pajarete wine, and ale and water. Pure water was always returned; it did not enter the stomach, and in a few seconds was rejected by regurgitation. Soda powders, stimulants, or anything with a strong taste, given in water, were swallowed and retained. This state continued until the year 1852, when the sense of taste returned, and she resumed her usual mode of eating, taking her meals with the family.

At the commencement, various nervous symptoms manifested themselves, in the form of spasms, mostly of the arms, never of the lower extremities, neuralgic pains in the abdomen, a permanent pain at the occipital base of the brain, which increased when the head was thrown back. These were soon followed by mental disturbances, particularly in the early part of the night, such as delirium, when it was difficult to retain her in bed, and frequently hallucinations of sight. At one period, for one or two weeks, there was something like tarantula, starting from her bed and dancing

through the house, from room to room, for an hour at a time, occurring regularly at 8 P. M.

As these subsided, a new series of phenomena occurred, which were supposed to proceed from duality of consciousness, usually called double consciousness. The first manifestation was in doing some act incompatible with her natural deportment; for instance, suddenly going into the kitchen, dressing a beefsteak, carrying it up into the parlor, and placing it on a table, when, suddenly returning to her natural character, she was surprised at the arrangements just made, and utterly ignorant of all she had been doing. At other times, without saying anything to her mother, she would put on a shawl and hat and go out into the streets, which was not a habit, and return to her proper consciousness at some distance from home, without knowing how she came there. These attacks were marked by a change of voice and a total change of character. From being mild and gentle, she would become abrupt and rude in her manner. At other times she would, in this state, play upon her piano, or go to work, sew, or engage in some other familiar occupation, about which she would not remember afterwards, so that it was difficult to distinguish one state from the other. These attacks were mostly spontaneous, but often followed any little mental emotion; one or more of them generally occurred daily. She could recall nothing of what had passed, but always supposed she had been asleep.

The first appearance of this singular abnormal state of psychical faculties was on February 27, 1845. It was attended with nausea and vomiting. The attack continued throughout two days. March 5th there was a renewal of mental symptoms without gastric disorder. From that time attacks of the so-called double consciousness have been of daily occurrence, varying in frequency, duration, and intensity, up to the present time, though now less frequent and much lighter.

From the existing pain at the base of the brain, I suspected some difficulty existed there which destroyed the sense of hunger, and I inserted a seton, which was worn for over a year. It was soon after that the sense of taste and the appetite returned, so that she resumed her usual mode of eating. During the first year of my attendance, liquid food (milk and soup) was introduced into the stomach by a tube, and continued for a period of certainly two years, when she resumed her normal mode of eating.

Allusion is made in *Combe's Phrenology* to two cases, which may be condensed as follows: The first, described by Dr. Samuel L. Mitchell, of New York, occurred in a lady residing in Pennsylvania, who, after arriving at adult age with excellent health, fell into a deep slumber, from which she awakened with a loss of every trait of acquired knowledge. After a few months another fit of somnolency occurred, and upon wakening she returned to her original character, that of a cultivated, intelligent lady. These alternations of consciousness and intellect had continued for four

years at the date of the report (1816). The second was observed by Dr. Dyce, of Aberdeen, but published by Dr. Dewar in the *Transactions of the Royal Society of Edinburgh*, 1822. It was that of a young girl, in whom this condition prevailed just before puberty, and disappeared when that state was fully established. After a sleep she would manifest many unusual traits of character, and, upon awakening, would be utterly unconscious of all that occurred, save her falling asleep; but upon the next recurrence of the paroxysm, she would perfectly remember all that had occurred in that state.

From the preceding cases, it will be seen that these singular psychical phenomena occurred in two modes. In those that have come under my observation, the access took place in an instant, without interfering with or having any influence whatever on the action of the senses or consciousness or of the intellectual operations, except the introduction of a new set of ideas and trains of thought, which ceased at once after different intervals. The other cases reported were preceded by a sleep, generally profound, and terminated spontaneously.

In an analysis of the psychical nature of man, consciousness appears to be the most universal and essential faculty, the principal or fundamental function of the brain. Through it we have a knowledge of our own existence, and that of the world without. The action of the senses excited by the impressions of the qualities, forms, and other phenomena of external bodies upon the nerves of special sensibilities are made manifest by consciousness in perceptions, and the formation of primary ideas representative of the external world. These are limited; they cannot probably exceed more than fifty or sixty. Consciousness reveals the operations of the intellectual faculties in the formation of primary, compound, complex, complicated, and general ideas, constituting the species, genera, orders, and classes of the sciences, and the highest range of thought—abstract or philosophical ideas, absolute truths, the nearest approach to a communion with the creative intelligence. To one alone has this great privilege been accorded—Sir Isaac Newton, who discovered and made known the great law of the universe. In like manner are revealed through consciousness the operations and actions of the moral faculties and instincts that govern and control man in his personal, domestic, and social relations; and is equally manifest in the moral sentiments, when those rare traits exist. These elevated faculties are antagonistic to the selfish tendencies of the moral instincts. They exalt motives to the highest order, and impart to the character the virtues that distinguish the great, the good, and the wise—the benefactors of mankind.

Consciousness appears to be the result or manifestation of the brain in action. It is immediately suspended by vertical pressure, and reappears as soon as that ceases. This fact has been established by repeated experiments in cases by which the brain has been exposed by the loss of a

portion of the bones of the skull. Lateral pressure does not produce this effect.

From this brief sketch of the offices of consciousness, the importance that has been claimed for it is fairly sustained. In fact, animal existence and intellect without consciousness are impossible.

Consciousness is passive; it reflects and expresses all the various motives, ideas, actions, and phenomena of the psychological faculties, intellectual, moral, and sensational; itself unchanged, "a tabula rasa"—like a looking-glass, it retains nothing of the ideas, images, and impressions that have passed over it.<sup>1</sup>

In the above cases the name of double consciousness is a misnomer. The symptoms are only those of sudden spontaneous mental action, uncontrolled by the will. In these cases the mind wants stability, and easily wanders. Most frequently the paroxysm is of short duration.

Regarding consciousness in this light, it takes the first rank in the psychical nature of man, which could have no existence without it. As to its nature, it is enveloped in the same mystery as the mind itself, and admits of no conjecture.

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ART. II.—*History of two Cases of Embolism: in one following Scarlet Fever, with recovery; in the second, connected with Disease of the Aortic Valves and Coarctation of Thoracic Aorta, ending fatally.* By J. FORSYTH MEIGS, M. D., one of the Physicians to the Pennsylvania Hospital.

CASE I.—G. H., a fine boy, ten years of age, of good constitution, returned home from school on the 9th of April, 1867, in his usual health. He found that a kitten had fallen into the cesspool at the back of the garden. Procuring a rope, with a basket attached, he spent half an hour with a companion over the mouth of the pool, inhaling its exhalations, in the endeavour to extricate the animal. This was between 2 and 3 P. M. Next morning he was not well, complaining of weakness, sore throat, and loss of appetite. I saw him in the afternoon, and found him with fever, lassitude, and sore throat. The fauces were dark red in colour, the mucous membrane turgid and smooth, and on the tonsils were patches of dark yellowish diphtheritic deposit. The lymphatic glands at the angles of the lower jaw were somewhat tumefied and hardened. I ordered ten grains of sulphite of magnesia in water every two hours, and milk-punch, supposing that the exposure to the unwholesome effluvia from the cesspool had produced an attack of diphtheria.

<sup>1</sup> That is the *office* of the mental faculty of memory.

On the following day, the 10th, in the morning, he was covered with an abundant, rather dark-coloured scarlatinous eruption; pulse very frequent; skin intensely hot; the throat dark-coloured, and its tissues thickened and turgid, with patches of false membrane of a dark, yellowish colour on both tonsils, and on the pharynx. The sulphite of magnesia was continued; milk-punch and beef-tea to be given every two hours alternately, in doses of a wineglassful.

*April 11.* Patient very ill; the fever intense, the pulse running up to 150; the skin very hot and dry; the eruption covered the whole skin, and was of a deep red colour, with a very sluggish movement in the capillary system; active delirium, with constant and violent jactitation, had set in; the throat was much swelled externally and internally; the whole fauces were of a deep purplish-red tint, except where patches of dark exudation were visible; and the act of deglutition had become so difficult as to convince me that diphtheritic paralysis of the pharynx, as well as acute pain on the slightest attempt to use the muscles, had combined to render swallowing almost impossible. During this day, and the three following, the condition of the patient was almost hopeless. The delirium and jactitation were constant; the fever, as marked by the heat and rapid pulse, intense. Not a teaspoonful of any fluid could be swallowed; indeed, it was doubtful whether he swallowed the water from a small piece of ice put into the mouth. The tongue was red and dryish; the urine decidedly albuminous; and the glands in front of the sternocleidomuscles near the angles of the jaw, very large and very hard. The bowels acted occasionally.

During this time the treatment consisted in innunctions, with glycerin cream over the whole body every three or four hours; in the use, every two hours, of enemata of two ounces of beef-tea, with two teaspoonfuls of brandy, and twenty grains of the sulphite of magnesia, and in the almost constant application, on the front and sides of the neck and throat, of an oblong India-rubber bag, filled with powdered ice and water. At night, when the jactitation and delirium were unusually intense, ten to twenty drops of laudanum, with increased amounts of beef-tea, were given by injection. It was thought by those who watched him, that the increased quantities of beef-tea used in this way were very evidently of use in lessening the violence of the nervous phenomena.

The case went on in this way until the sixth day, when the swallowing improved a little. He began to enjoy the ice, and soon afterwards he took water and then milk-punch from a spoon. He now mended rapidly, so that by the eighth day he was taking food in sufficient quantities by the mouth, and the enemata were abandoned. Simultaneously with this change the fever abated, the delirium and jactitation disappeared, and the lymphatics, though still very hard and large, began to recede. The principal symptom now observed was extreme asthenia. The mind and

senses were clear, but the slightest exertion, whether mental or bodily, was exhausting. During all this time there had been no unusual signs of cardiac disturbance. The sounds of the heart had retained their natural character, and there had been no irregularity in the rhythm of the pulse. The treatment consisted in the use of milk-punch and beef-tea, in wineglassful quantities every two hours, with the addition of a cup of tea and a little milk toast, when he wished them; and in as complete repose of mind and body as possible. No medicine was given.

The patient continued steadily to improve. The desquamation went on rapidly and abundantly. The urine ceased to be albuminous. The strength mended, and anxiety about the case was passing away, when, on the twelfth day of the disease, Sunday, April 21, a quite new and unusual train of phenomena set in. About 3 P. M., after a comfortable morning, whilst lying quietly in bed, he complained suddenly of numbness in the left foot and leg. This was followed very soon by similar sensations in the left hand and forearm. The left leg below the knee, and the lower part of the left forearm and hand became white, almost waxy in appearance, and the child began to complain of pain in the whole leg and arm; pain which, in the foot and hand, was intense, causing great suffering and distress. About half-past three P. M. it was found that there was no pulsation perceptible in the radial artery, and farther and careful investigation failed to discover any pulsation in the vessels below the clavicle. At the same time no pulsation could be felt in the arteries of the leg below the popliteal artery, behind and a little below the knee. Sensation was affected in both arm and leg, the child complaining, when touched, of numbness and imperfect feeling, and at the same time suffering violently with pain. The pain was described as being a combination of a stinging sensation and a violent aching. As judged by the hand and by the patient's own sensations, the foot and hand were both cold. The coolness in the upper extremity extended some distance up the forearm. During this time the general condition of the patient continued unaltered; pulse 84, full, and quiet. No increase in frequency of respiration, nor in the temperature of body, as judged of by hand. Nothing abnormal in heart-sounds, except some intensification of second sound over pulmonary orifice. No cerebral symptoms; no general chilliness. There was decided difficulty in moving the arm, and the movements of the fingers were very slow and imperfect. The whole arm, and the leg below the knee, were wrapped in soft carded cotton, and then enveloped loosely in blankets. The leg was laid upon a plane surface; the hand kept rather lower than the shoulder (to assist the flow of blood into it); directions given for as absolute repose of the body as possible; the diet continued as before. Bottles filled with hot water were placed by the side of the limbs to assist in maintaining a proper temperature.

During the afternoon the pain continued, and in the evening the arm



and hand were found decidedly cold. There was also a marked diminution of temperature in the foot and leg.

22*d.* Patient passed a moderately comfortable night, suffering occasionally sharp twinges of pain. The foot and leg appear to be regaining warmth, and there is, perhaps, some tendency to a return of the natural colour; there is also less pain in them. No pulsation below the popliteal artery; hand and arm below elbow still cold; forearm and hand pale, especially hand and fingers, and fingers much shrunken. No pulsation below clavicle. Much pain caused by moving the arm to dress it; still unable to move the limb himself; pulse 88; respiration quick. Ordered one grain of sulphate of quinia with five drops of tincture of chloride of iron in mixture, every three hours. Evening: No change in condition of arm; both temperature and colour of foot and leg improving. An anodyne was given.

23*d.* Restless all night; suffered a good deal of pain; pulse 96; leg decidedly improved, the pain in foot being much less severe, but no pulsation perceptible in either tibial artery. On either side of ball of thumb and on the wrist, there are here and there dark reddish spots, which are the seat of stinging pain. The whole thumb is exceedingly sensitive, the fingers much shrivelled, wrinkled, and slightly bluish, and the nails bluish; no trace of warmth. Exposure to the air evidently increases the pain; and, after dressing, the patient suffered greatly for some time. Evening: pulse 88; perhaps a slight change for the better in the appearance of the arm; patient looks rather worn.

24*th.* Pulse 104; circulation certainly improving. Decided hyperæmia of skin about elbow and on back of forearm; the surface here presenting a faint pinkish hue, which disappears to return very slowly after pressure. Less blueness of nails and ends of fingers; hand and fingers, perhaps, a little more full in their general outline. The reddish spots noticed yesterday, though large, are less deeply coloured; pain not so marked, except when the limb is handled; pulsation as before. Evening: About the same; arm not uncovered at request of patient, who feared the pain which follows any disturbance.

25*th.* Pulse 96; fingers undoubtedly fuller, more succulent, less wrinkled, and of better colour; arm not uncovered; foot gives no pain, and is moved about a good deal in the bed. Treatment as before.

26*th.* Slept well; pulse 88; hand improving in colour, so that all apprehension about the supervention of gangrene has passed away. Whilst carefully examining the arm above the elbow, I felt distinctly a feeble pulsation in the brachial artery, an inch and a half above the insertion of the biceps, which extended about three inches in an upward direction; whilst below, at the point where the impulse ceased, the pulsating tube could be traced distinctly to be continuous with a solid cord of very small diameter, which itself could be followed down to the tendon of

the biceps, and which was evidently the brachial artery contracted upon itself, and, as yet, impervious to the feeble stream entering the vessel at a higher point. No pulsation could be felt in the axillary artery, but the subclavian could now be felt beating faintly below, as well as above, the clavicle. Evening: Gland below right ear much swollen; severe earache.

27th. Arm still improving. In the morning, the portion of the brachial artery extending an inch and a half upwards from the biceps tendon, which yesterday was felt as a solid cord, now pulsates faintly but positively.

28th. A small artery pulsating quite strongly was felt just above and behind the external condyloid ridge; patient doing very well.

29th. Leg has recovered normal appearance, but no pulsation below the popliteal space. The capillary circulation of whole leg and foot appears perfect; dressing removed from leg.

30th. Slight pulsation felt in the radial artery.

From this time the patient did well. There was a slow and gradual but continuous improvement in every respect. The pain in the foot had entirely ceased; that in the hand remained, in a slight degree, for some weeks longer. The sensation was not so much pain, as a disagreeable pricking and burning felt in the fingers, and particularly in the thumb. These parts were, at the same time, somewhat tender to the touch, especially the thumb. The disordered sensation was still present at the end of six weeks from the date of the embolism. The desquamation was very abundant.

As to the treatment, I have only to remark, in addition, that he was kept very quiet, in the horizontal position, for a period of six weeks from the occurrence of the embolism, no greater disturbance being allowed than that produced by the effort of lifting him from the bed to a sofa. He was now allowed meat, with the ordinary vegetables, and the milk-punch was given as long as he would take it. The iron and quinia were continued for six weeks, until he was strong enough to get into the open air. The heart was examined carefully at many different periods. Its action was always regular; at first the impulse was rather feeble, but this improved gradually; at no time was there any roughening of the sounds. The only change from the healthy condition was the one already alluded to; a moderate intensification of the second sound over the pulmonic, as compared with the aortic orifice.

*Remarks.*—There can be no doubt that this was a case of embolism, the plugs which blocked the subclavian or axillary artery and the tibials having been detached from the left cavity of the heart. In the *American Journal of the Medical Sciences* for April, 1864, I published a short paper on "Heart-clot as a Cause of Death in Diphtheria." In that paper, the results of three post-mortem examinations, in cases in which the diagnosis had been made during life, are given. In one, the third, it is stated

that, besides the large clot occupying the cavity of the ventricle, there were found quite a number of thin fibrinoid concretions, lying on the lining membrane or between the columnæ carneæ. These concretions were stained by blood, of moderate thickness, adhered with some tenacity to the internal wall, and resembled closely the exudation which one peels off the mucous membrane of the air-passages in croup. There can be little doubt that some concretions of this kind had formed on the lining membrane of the left ventricle, in the case just described, had suddenly become detached, washed into the current of the circulation, and arrested in the arteries of the left arm and leg.

That in this case there were present the two poisons simultaneously, that of scarlatina and of diphtheria, I have no doubt. The presence of severe anginous symptoms from the very first day, the supervention of paralysis of the pharynx on the third day (a condition I have never yet met with in pure scarlatina, however violent or malignant), the early appearance of albuminuria, and the singularly marked asthenia on the decline of the more violent symptoms, all convince me that the scarlatinous poison was not the only one present in the case. Then, too, the setting in of the disease the very night after the exposure of the child to the exhalations of a cesspool, is another argument in favour of the theory of the presence of the diphtheritic poison.

This case, with those in the paper on heart-clot, just alluded to, furnish an explanation of some of those sudden and unexpected deaths during the course of scarlet fever and diphtheria, and even during an apparently favourable convalescence from these diseases, which hitherto have been referred to as caused by sudden debility, or which have been gaped at in silent horror, and dismissed as beyond all rational explanation. There are few practitioners of some years' experience, I imagine, but can recall one or more cases of this kind happening to themselves or to their brothers in medicine, which have shocked their own faith in both diagnosis and prognosis, and have afforded some ground for the carpings and cavillings of a large class of people, who go through the world in a chaos of doubts and sneers at a science the true nature and meaning of which they will not take the trouble to understand.

The history of this case adds to my previous conviction that there is a tendency in the very nature of diphtheria, and perhaps, indeed, very probably in scarlatina also, to the formation of exudation upon the lining membrane of the cardiac cavities. What may be the condition of the fluids or solids which determines the deposit, we do not yet know; but that the tendency exists is, I think, plain. The important question for medical men and for the world is, can the exudation be prevented? or, once formed, can anything be done to lessen the danger to life which it must create? As to the first point, the prevention of the deposit, I see no better method, thus far, than the use of what means experience has

shown to be the most useful in the cure of the general disease, since we are so ignorant of the special local conditions which may, in any particular case, determine the exudation, that we seem forced to depend solely upon general treatment. I have very little faith in any of the mere medicines which have been used hitherto in scarlet fever. Frequent and methodical inunction, pounded ice in bags or bladders, or cloths wrung out of iced water, applied to the front and sides of the neck when the anginous symptoms are severe, cold sponging of the whole surface when the temperature is high, the free use of iced water as a drink, sufficient liquid food—and, when the patient will not or cannot swallow, enemata of water, or beef or chicken-tea, or milk-punch, or yolks of eggs in water with brandy, given every two hours (not less if the bowel will retain them) in quantities of from two to four ounces, constitute, I believe, the best practice. The spiritus mindereri, or sweet spirits of nitre, or carbonate of ammonia, or iron and quinia, may be given internally, if they can be swallowed.

In diphtheria I have found positive benefit from the use of quinia, with muriated tincture of iron, and from frequent administrations of food—such as milk-punch and beef-tea, yolks of eggs, either by the mouth or by injection, when the patient cannot or will not swallow.

During the last winter I have used Polli's remedy, the sulphite of magnesia, in several cases of diphtheria and scarlet fever. In one case (besides the one here recorded) of scarlet fever and diphtheria following directly upon mumps (several other members of the family had true mumps afterwards), in which the diphtheritic element was much the most pronounced, in a delicate boy nine years of age, and in whom albuminuria, excessive difficulty of swallowing, rather copious hemorrhage from the nose and throat, showed a very serious attack, the patient recovered under the use of the nutrients, stimulants, and the administration of five grains of sulphite of magnesia every two hours for the first two weeks. At the end of the two weeks this remedy was given every four hours, and the iron and quinia mixture every four hours. In another case of malignant scarlet fever, the sulphite was also used, and certainly the severe symptoms moderated with unusual rapidity. Still, nothing but a long use of this drug by different hands, in different localities, and during several epidemics of varying types, can ever determine the question whether it has any real control over the effects of these poisons on human health.

We have next to consider what is to be done when there is reason to suppose that an exudation has formed within the heart, or when embolism has occurred. As to the diagnosis of clot, or exudation in the heart, the history of the case detailed in this paper shows very clearly that concretions may form within the heart without giving rise to any symptoms to reveal their existence. Though I examined the heart frequently—induced so to do by a vague feeling of insecurity arising from my pre-

vious experience in diphtheria—I found nothing in its action or in the sounds which even aroused suspicion. Now, on looking back, I can recollect the curious, the deep asthenia, under which the child laboured; and I ask myself whether this may not have been a consequence of the state of the heart. In the cases published in this Journal in 1864, I have called attention to the diagnosis of heart-clot in diphtheria, and have there remarked upon the peculiar asthenia which accompanied those cases. In the present case the asthenia had something peculiar about it. The child was perfectly conscious, could speak and move; he ate and drank, had his little fancies, but looked weak and feeble, like a delicate infant just born. There was something touching and pitiful in his weary look, more than one usually sees in convalescence. But I must refer the reader to the papers quoted for farther discussion of this point.

As to the proper treatment should embolism occur, I can only recommend what was done in this case. The treatment here was threefold: absolute repose of body and mind; the free use of nutrients and stimulants; and the maintenance of warmth in the affected limbs. I believe that, in cases of severe disease of all kinds, entire repose is a very important part of the treatment. As little waste of the vitality as possible should be allowed. By husbanding in this way the *vis vitæ*, we seem to give nature a larger power to exert her *vis medicatrix*. The principle to be acted upon seems to be, to prolong in every way the life by saving wear and tear, and by the use of food and stimuli; and thus to give nature time to work out her own salvation. Above all, the physician should not abandon hope so long as there is life, in cases of this kind.

It was suggested, in the above case, that stimulating frictions should be made to the arm and hand, to promote the circulation. I doubt now whether they would have been of any use, and feared at the time lest any handling whatever might disturb injuriously the feeble vitality which remained in the hand and fingers.

NOTE.—This child recovered his health entirely—at least so much so as to eat and take exercise as usual. In July he was removed to a distant point on the sea-coast, where he was very well. Some weeks later he was taken to a mountain region, and the day after the journey was seized with a choleraic dysentery, which rapidly prostrated him, and ended fatally after some four or five days' illness. I did not see him in this illness, but could not hear that he exhibited any unusual symptoms of disturbance of the circulation. He died gradually, with the usual symptoms of collapse from intestinal disease. No autopsy was made.

CASE II.—I was called to visit, at one of our large hotels, on the 20th of April, 1867, a gentleman from a distance, an entire stranger to me. He was fifty-two years of age, of moderate height, well developed as to flesh, of good complexion, and, except an expression indicative of annoyance at being sick away from his home, he did not look at all ill. He

had left home some few days before by the advice of his physician, having been seized a short time before this, after a long ride in an open wagon, with pain in the loins and legs, supposed to be rheumatic. His chief symptoms at my first visit were loss of strength and appetite, occasional slight febrile symptoms, and what he supposed to be a rheumatic inflammation of the right foot. On his exposing the foot I was surprised to see an erythematous blush, with a puffy condition of the integuments, and some soreness on pressure, curiously limited so as to form one oblong patch on the instep, just over the course of the anterior tibial artery, and another one, restricted in the same way, over the line of the posterior tibial. These patches might have been two inches long by an inch wide, with irregular edges fading gradually into the healthy skin around. The pain was not very severe, and, though confined to his bed, he could move the limb freely in any direction. I was unable to detect any pulsation of the arteries under the patches, and suspecting embolism, inquired as to his history. He reported that he had been the subject, for many years, of a serious heart disease, which, however, had not prevented him from leading a very active and a very successful life as a business man and politician. He also stated that he had consulted Dr. Cammann, of New York, several years before, and that Dr. C. examined his case with unusual care and interest (of this more hereafter). On examination I found that he had severe constrictive and regurgitant disease of the aortic orifice, and a very powerful left ventricle.

Confirmed by the history and state of the heart in the diagnosis of embolism, he was informed that the case was not one of rheumatism, but a local inflammation connected with the state of the heart. Absolute repose on the bed was enjoined, a lotion of leadwater and laudanum applied to the inflamed points, an elixir of bark given as a tonic, and the advice given that he should make ready to return home as soon as possible. This treatment was pursued during five days, when, as the redness was very much diminished, the slight fever had passed away, no new embolisms had appeared, and as a careful friend was ready to accompany him home, a bandage was applied over the foot and ankle so as to produce a very moderate pressure, and he was allowed to start for home on the sixth day, with very positive directions that he should travel always in a horizontal position, and should use a crutch in going from the carriage to the hotel or train.

He arrived home safely, but suffered very much, I was told, during the last two days of his journey from pain and exhaustion.

For the remaining history of the case I am indebted to the very able physician who had attended him for many years, and who gives a most interesting account of the course the symptoms took after the patient left this city, and a thoroughly scientific sketch of the post-mortem appear-

ances. For certain reasons this gentleman prefers that his name should not be mentioned. He writes at the date of 14th June, 1867:—

“*My Dear Sir:* As it will doubtless interest you, I will briefly describe the condition of your late patient from his return on the 1st of May till the time of his death on the 26th of the same month; also the post-mortem examination.

“Mr. —, for some time after his return, continued to improve; the pain and inflammation in the right foot diminished, and the approach to convalescence was so far established that, on the 15th of May I permitted him to leave his bed, to which, up to this time, I had strictly confined him. In the act of sitting up on that day he was suddenly attacked with tumultuous action in the heart, great dyspnœa, and in a short time thereafter with severe pain in the right arm, followed immediately by coldness and numbness, and total absence of pulsation in the brachial artery from the axilla downwards. The arm was kept at the natural temperature by the continuous application of external warmth, and in a few days the pain and numbness disappeared, and the natural nutrition and sensation of the limb were restored without inflammation occurring, as it did after the obstruction of the tibials of the right leg. From this time, however, the patient was subject to frequent and distressing attacks of palpitation and dyspnœa, and died on the 26th ult., with symptoms of embolism in the descending aorta, as the pulsation in both femorals was gone for fourteen hours before death, although there was strong pulse at the left wrist, and in the carotid.”

*Post-mortem Examination.*—Age fifty-two; body not emaciated, and equally well nourished in the lower and upper limbs. A firm embolus was discerned in the right tibial, under the annular ligament of his ankle. The posterior tibial was examined, from its division into the plantars as high as the middle of the leg, but no embolus was found. It may, probably, have been broken down and washed into the plantars before his death. The right brachial was completely obstructed at its upper part, by a firm embolus of an inch in length, and a soft coagulum extended from the obstruction as high as the giving off of the circumflex arteries in the axilla.

The left ventricle of the heart was hypertrophied and dilated; the aortic valves were thickened, irregular, and ossified at several points. One of the valves was perforated by a large irregular opening, to all appearance produced by recent ulceration; the edges of the opening were soft, evidently undergoing disintegration, and the membrane covering the valves extending for some distance into the heart, as well as upwards into the aorta, was inflamed. A plug of colourless lymph occupied the perforation in the valve, and two or three similar masses were found entangled in the chordæ tendineæ. The ascending aorta was greatly dilated, its coats thickened and degenerated, and it was almost filled up by a recent

coagulum. The aorta was constricted at the descending part of the arch, exactly at the insertion of the ductus arteriosus; the constriction was only a few lines in length, as if the artery had been partially brought together by a ligature. The pervious portion would scarcely permit a No. 9 bougie to pass through it. A small sacculated aneurism was in process of formation an inch below the constriction. The abdominal aorta and iliaes were not more than half their normal size. We had no opportunity of examining the mammary and epigastric arteries. It is probable that the lower limbs derived, through this and other anastomotic channels, their principal nutrition. You will find in the last edition of "Walshe on the Heart" a drawing exactly corresponding with the coarctation of the aorta in Mr. ——'s case. The late Dr. Cammann, of New York, was consulted by Mr. —— eleven years ago, after an attack of endocarditis, and he at that time diagnosed dilated hypertrophy of the left heart, disease of the aortic valves, dilatation of the ascending aorta, and constriction of the aorta after the giving off of the great vessels of the arch. The post-mortem examination has, as you see, verified most completely the accuracy of the diagnosis of that eminent stethoscopist. I may mention, in conclusion, that, up to his last illness, Mr. —— led a very active life. He was very excitable, and a great local politician. He felt no inconvenience from his disease, which must have been in existence for at least a dozen years, and would never attend to the frequent warnings I considered it my duty to give him, to take care of himself. I hope you will find the above account instructive. It completely confirms the view you took of the case, which, when you saw it, was a very obscure one, especially from the unusual situation of the first obstruction in the arterial system."

*Remarks.*—The above case is interesting on account of the rarity of the lesion, and for the proof it gives of the possibility of diagnosing the presence of the alteration many years before death. For my own part, I had no suspicion that constriction of the aorta was present. The disease of the aortic valves which I found was all-sufficient to explain the embolism, and I looked no further. Dr. Cammann discovered the constriction eleven years before the death of the patient, but his own death, some years since, prevents me from learning the method by which he determined the exact nature of the case.

Any one who may wish to study the nature and method of diagnosis of this curious and rare lesion, will find a very full and able clinical lecture on the subject, by Dr. Walshe, in the *Medical Times and Gazette* for October 17th, 1857. The diagnosis in the case described was not proved by a post-mortem examination, but there is no reason to doubt its correctness. In the same Journal for November 21st, 1857, Dr. Walshe states that his attention had been called to a notice of two cases of the same kind, in which Prof. Skoda had made the diagnosis during life (*Wochenblatt of Vienna*, 1855).



A very clear and concise account of the alteration, will be found in *Virchow's Handbuch der speciellen Pathologie und Therapie*, Fünfte Band, Zweite Abtheilung, p. 33, by H. Lebert. Another account with some cases, in the foot-notes, is given in *Rokitansky's Pathological Anatomy* (Sydenham Society Ed.), vol. iv. p. 304. Lebert, in the work cited above, states that he has analyzed eighteen cases in *Virchow's Archiv*, Band iv., and that Rokitansky gives, in his recent work, the number of cases on record as twenty-six.

Constriction of the aorta, just at or below the point of insertion of the ductus arteriosus, which constitutes the special lesion in this case is, in all probability, nearly always the result of a congenital fault. The narrowing or obliteration of the vessel is supposed by Rokitansky to be very similar to the atrophy of the foetal passages, as, for instance, that of the ductus arteriosus: "Such an obliteration of an artery is occasioned by the establishment of a collateral circulation, which is especially widened by a congenital narrowness (obstruction) of the artery in question." He states that this contraction and closure of the aorta have been observed from the fourteenth to the ninety-second year.

The principal points on which the diagnosis of such a case must rest are, the existence of dilated hypertrophy of the heart, frequently the signs of disease of the valves, and especially of the aortic, a loud sawing murmur over the præcordial region, loudest at the base close to the right or left edge of the sternum, transmitted upwards to the right, to the left, towards the apex of the heart, and heard in the carotid and over the vertebral column behind. The most important signs, however, the ones most to be relied upon, are those produced by the enlargement of certain collateral anastomotic channels in the upper part of the thorax, and, in some cases, a diminished size and pulsation of the femorals, occasioned by a diminished blood-supply through the contracted aorta to those vessels.

As the key to the diagnosis is to be found in the existence and discovery of the dilated vessels which carry on the collateral circulation, I shall quote from an article by Dr. Craigie, in the *Edinburgh Med. and Surg. Journ.*, vol. lvi., p. 447, a very graphic account of the route taken by the blood, from the aorta above the constriction to that vessel below that point, and to the femoral arteries. The case is one described by Mr. Joseph Jordan, of Manchester, in the *North of England Med. and Surg. Journ.*

Mr. Jordan says that "the origin and course of the aorta were as usual, but a remarkable peculiarity of form had taken place in its arch; there were dilatations at the origin of each of the three great arteries which arise from its convexity, and decided contractions between those dilatations. It was evident the blood, being obstructed at the point aforesaid, had been thrown into those three vessels, viz., *arteria innominata*, the left carotid, and left subclavian, which were greatly increased in dia-

meter, particularly the subclavian, which, on comparison, exceeded the common iliacs. The carotids were not so remarkably enlarged.

"The first set of vessels which the subclavian gives off were enormously increased in size, but particularly the *arteria intercostalis superior*, and the internal mammary. The *intercostalis superior* on each side equalled the femoral artery in size, took its usual destination, but had become remarkably tortuous and convoluted, dividing itself into several branches, some of which passed out of the chest, behind the ribs, and descended amongst the muscles of the back to inosculate with the posterior branches of the intercostal arteries of the descending aorta. But the largest branches passed in front of the ribs, and terminated, by remarkable anastomoses, with the first and second intercostal arteries of the aorta, but particularly with the first. The ribs had become deeply absorbed and sulcated in some parts by the pressure of the branches of this artery.

"The internal mammary on each side was very little inferior to the bronchial in size. They took the usual course, and terminated in five or six branches, which were continued directly into the fifth, sixth, seventh, and eighth intercostal arteries of the aorta; these latter arteries were greatly enlarged, and had become remarkably tortuous, and in some places convoluted on themselves. There was no remarkable anastomosis between this artery and the epigastric, which was of its usual size through its whole course. It is to be regretted that, the diaphragm having been removed, the size of the phrenic arteries could not be ascertained.

"The next enlarged collateral channel was the *infra-scapular* of the axillary artery, or a branch arising immediately below it. This was larger than the ulnar artery, ran down the side of the chest, under the *latissimus dorsi*, in a very tortuous manner, and terminated in the seventh and eighth intercostal arteries of the aorta."

That the collateral circulation is not always carried on by precisely the same route, is shown by the fact that, in a case reported by M. Reynaud, of a man who died at the age of ninety-two with this lesion, the epigastric arteries, instead of being of their natural size, as in the case just cited, were found to form, with the internal mammaries, one single trunk, the size of which exceeded that of the external iliacs, and which entered the crurals, which were also much enlarged.

To exhibit still farther the value of the signs furnished by the new channels which the blood is forced to take, I shall quote the symptoms observed during life in some of the reported cases. In one it is stated, that the blowing sound heard at the arch of the aorta was almost equally loud at the lower angle of both scapulæ, where two or three of the intercostal arteries were observed to pulsate with violence. There was no sound in this case along the femoral arteries, which beat so faintly that they could scarcely be felt. In another case, bulgings of the compressed and pulsating arteries were to be seen over the whole surface of the back, running in a twisted manner, and more especially diffused on both sides of the vertebral column in the direction of the axilla. In Dr. Walsh's case, the pulsations of the radials and ulnars were moderately visible and locomotive; facials visible; femorals invisible; left posterior tibial artery

very slightly so; carotids (right somewhat more than left) and subclavian violently, expansilely, visibly beating, widening base of neck at each ventricular systole; an artery, about size of radial, running vertically along right vertebral groove from posterior base of neck, visibly pulsatile; about inferior angle of left scapula arteries, visibly and locomotively pulsatile, tortuous, in the main vertical; also pulsation found horizontally in several places in the course of the ribs; two spots about inferior angles of scapulæ where heaving expansile impulse.

It must be evident from these data, that in any given case in which a suspicion may arise as to the existence of a constriction of the thoracic aorta, whether congenital or acquired, the presence of some of the abnormal pulsations above described, with or without unusual feebleness of pulsation of the femoral arteries, ought to be sought for. If found, they constitute, probably, certain—and the only certain—proof that the suspicion is well-founded; and the diagnosis in such case might be considered as established.

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ART. III.—*On the Insusceptibility of Pigeons to the Toxic Action of Opium.* By S. WEIR MITCHELL, M. D., Member of the National Academy of Sciences.

DURING September of the present year it became desirable, in the prosecution of a certain research, to cause profound sleep in pigeons. For this purpose I injected under the wing half a grain of sulphate of morphia, dissolved in water. Returning to my laboratory in a few hours, I found the bird unaffected. I then injected the groin of a second pigeon with forty drops of black-drop (acetum opii), and in ten minutes gave by the mouth, through a tube, fifty-five drops. At the same time, a third pigeon took sixty drops of black-drop inwardly, and at the tenth minute received in one groin forty-five drops, and at the fifteenth minute, in the other groin, an equal amount. The latter bird soon became very awkward in its movements; but as this was possibly due to the irritation caused by the injections of the groins, I was not sure that, either in this or the companion case, I could perceive a single unmistakable sign of opium poisoning. Astounded at an immunity apparently so perfect, I endeavoured, a few days later, to discover what amount of opium was needed to kill, and obtained the following results: Pigeon took eighty drops of black-drop internally; no effect except a tendency to keep quiet; no signs of stupor; no change of pupils; feathers ruffled, as is common with these birds when sick from any cause. Pigeon received forty-two minims of black drop under skin of groin. Symptoms the same as in last case. Neither of them slept at all, and both were well the next day. Pigeon received under skin, in

three localities, in all, two grains of sulphate of morphia, dissolved in water slightly acidulated with acetic acid. No effects were seen other than those described in the former cases. Pigeon took, internally, three grains of sulphate of morphia, dissolved; recovery without notable symptoms. Pigeon took, at 8.30 A. M., two hundred and seventy-two drops of black drop. He retained it during an hour, but at 12 was found to have vomited an unknown amount of it, by estimate at least half; recovered after remaining all day quiet in the corner of his cage; not asleep, and capable of being easily roused, and then able to execute every usual movement, as flying, walking, and the like. The final experiment seems to me decisive. To a large pigeon, which, within the two preceding days, had swallowed forty-two drops of black-drop, I gave, between two P. M. and six o'clock, *twenty-one* grains of powdered opium in soft pills of three grains each. Except the usual tendency to remain quiet, none of the common evidences of opium poisoning appeared, and the pigeon was well and active the next day.

After proof so decisive of the difficulty, I am tempted to say, the impossibility of causing death from opium or morphia, it is needless to add to the above experiments. Most poisons affect the pigeon readily enough, but so far as I am aware, no other creature is thus protected from the power of opium. The difficulty of influencing rabbits by belladonna and its derivative atropia is well known, and the dog is also far less susceptible to the effects of the latter drug than is man. Thus I have seen a dog recover after taking twenty-one grains of atropia; but he had in the interval violent convulsions. The case of the pigeon seems to stand quite alone in the absence of symptoms, and in the amount of a poison which it can bear unharmed. The explanation of the cause of this escape would in all likelihood enlighten us as to the true mode in which opium acts upon the creatures which are apt to feel its peculiar powers; but whether we shall ever attain to a knowledge of the reason for these strange insusceptibilities is somewhat doubtful. The most remarkable of them all is the failure of serpent venom to injure its maker or other poisonous snake, and I never have been able to obtain the faintest clue to the cause of the protection, although I have industriously examined the matter in every conceivable way.

It appears to me quite unlikely that the facts related in this paper can have escaped previous notice; but as they are certainly not commonly known, and may be altogether new to toxicology, I have thought it worth while to put them on record, hoping to study them more fully at a future period.

ART. IV.—*Hyposulphite of Soda in the Treatment of Malarial Fever.*

By THAD. L. LEAVITT, M. D., of Germantown, Pa.

IN the April number of this Journal for 1866 I recorded the history of a case of intermittent fever which, having resisted the ordinary treatment, recovered rapidly under the exhibition of the hyposulphite of soda. Since that time it has been my care, in the few cases of malarial fever occurring in this elevated region of country, and which have come under my observation, to further test the efficacy of this new remedy, and have preserved notes of the following cases:—

CASE I.—J. B., American, æt. 29, residing in a healthful locality, but who suffered from intermittent fever two years ago while in the army—lasting, according to his statement, for six months before being entirely relieved—was attacked April 20, 1866, with chill, fever, and profuse perspiration, the chill commencing at four o'clock in the afternoon, and occurring daily.

April 27. Patient presented the ordinary appearance of a sufferer from ague; spleen somewhat enlarged, painful upon pressure, and a dull aching over this region. Ordered fifteen-grain doses of the hyposulphite of soda in solution every two hours, and applied cantharides over the spleen.

28th. No return of paroxysm last night, sixty grains of the soda salt having been taken before the hour of the chill. Patient expresses himself rather disappointed, fully anticipating a “*shake*,” having no faith in any remedy other than quinia, of which, he states, he has taken a great quantity while in the service. Ordered to continue the solution at intervals of three hours.

May 4. Has been entirely free from the slightest paroxysm since the 26th of April; forty-five grains of the hyposulphite having been taken daily since the 1st inst., was discontinued at this time, tr. chloride of iron being substituted, gtt. x, s. t. d. The pain in left hypochondriac region relieved.

10th. Great improvement in appearance; has had no return of his ague.

CASE II.—B. D., æt. 13; American; tertian intermittent, contracted in Trenton, N. J., October, 1865. Saw her first the November following; a well-marked case. Sixty grains of the hyposulphite were administered daily, and the patient recovered after six days' treatment.

July 9, 1866. This person again presented herself at the office, suffering from a return of the intermittent, this time assuming a quotidian type, chill commencing at one o'clock P. M. Her family are exceedingly poor, even the necessities of life being at times wanting; a family of three persons lodging in a single low, damp room, unwholesomely located, and surrounded by all the squalid attributes of poverty. The hyposulphite was ordered in fifteen-grain doses every two hours. Patient very anæmic and debilitated.

12th. Yesterday the chill again returned, though she escaped entirely on the 10th. To continue the remedy.

13th. Chill occurred yesterday some three hours later than formerly. The mother, upon being closely interrogated, admitted carelessness in the regular administration of the medicine, on account of the child's obstinate refusal to take it.

14th. Chill again returned yesterday, at one o'clock. Finding the child

still failed to receive the quantity as directed, and being quite disheartened at the indifference and carelessness shown, the case was abandoned; but subsequently the child made her appearance at the office, to announce her recovery.

The failure of the remedy in this case to neutralize the malarial poison was, I think, clearly traceable to its non-administration in sufficient doses. The first day the medicine was taken regularly as ordered, and the result satisfactory in the arrest of the chill. Subsequently its irregular exhibition and discontinuance fully accounted for the absence of satisfactory effects.

CASE III.—M. A. W., æt.  $3\frac{1}{2}$ , American, residing in Fisher's Hollow, a low, malarial region northeast of Germantown, was brought to my notice March 19, 1867, suffering at that time with a well-marked chill, occurring at nine o'clock, and which the mother stated was the third in the last five days. Child being very much debilitated, though not anæmic, ordered two-grain doses of sulphate of cinchonia at four, five, six, seven, and eight o'clock A. M., and four grains at noon and bedtime; milk-punch, a wine-glassful three times daily, and tr. ferri chlorid., five drops four times a day.

March 25. Has had chill every other day regularly, though taking the cinchonia as prescribed. The hyposulphite of soda was substituted, and fifteen-grain doses in cinnamon-water given every four hours; ten drops of the iron tincture four times a day. The hope of securing the tonic as well as the antiperiodic effect of the cinchona was the reason for not administering the soda in the first place.

April 2. No more chills, the last occurring the 25th ult. Child being still feeble, milk-punch and beef-tea continued; the hyposulphite being suspended.

8th. Child looks very much better; has had no return; appetite good; mother considers her well.

CASE IV.—H. W., English, æt. 37, mother of the case just mentioned, applied for treatment April 2, 1867, suffering from a tertian intermittent to which she was subject every spring and autumn, and had always been promptly relieved by quinia. Much emaciated, and presents a forlorn appearance; complains of great poverty, and want of proper food. Ordered the hyposulphite of soda in twenty-two grain doses every two hours, and supplied her with milk-punch and Borden's extract of beef for tea, of each of which she was to take a wineglassful four times daily.

April 4. No chill yesterday; seems much better. To continue the salt at intervals of four hours.

6th. Doing well. Continue the solution as before.

8th. Has had no chill; considers herself well.

CASE V.—Mrs. B., æt. 60, residing in a damp neighbourhood, was attacked with quotidian intermittent April 29, 1867. Saw her the next morning at eleven o'clock, the hot stage of the paroxysm having just commenced. Ordered immediately thirty-grain doses of the hyposulphite, to be given every three hours.

May 1. Stomach has tolerated well the large dose; no return of the chill. To continue twenty grains at same interval.

2d. Slight paroxysm occurred yesterday afternoon as late as five o'clock.

5th. No symptom of intermittent has appeared, the hyposulphite having been stopped yesterday.

CASE VI.—A. McG., æt. 38, stout Irishman, attacked with chill Sept.

14, 1867, contracted in Trenton, N. J. Saw him first two days later, when shivering under the influence of tertian ague. Fifteen-grain doses of the hyposulphite were immediately prescribed, to be taken every two hours.

*Sept. 18.* No chill to-day.

*19th.* Chill returned last evening, the soda having been neglected during the day on account of the absence of his chill. Dose increased to thirty grains every two hours.

*20th.* Stomach tolerates this large amount, and no exacerbation noticed to-day. To continue at intervals of three hours.

*23d.* No return of chill; patient will go to work to-morrow.

CASE VII.—E. R., æt. 14, American, suffering from chilliness, influenza, &c., was ordered sulphate of cinchonia, two grains every two hours, Nov. 12, 1867. Notwithstanding, a well-marked chill, followed by fever and sweat, occurred four days after, when twenty grains of the hyposulphite were directed to be taken every three hours.

*Nov. 17.* Slight exacerbation noticed at a later hour to-day. Continue treatment.

*19th.* Not the slightest return of the intermittent symptoms noticed. Stopped the medicine.

*21st.* No return; patient considers herself well.

CASES VIII., IX.—Frank and John F——, æt. 3 and 5, anæmic and feeble Scotch boys, living in a low, malarious neighborhood near Nicetown, were attacked respectively March 1 and 5, chills occurring daily. The hyposulphite of soda in eight and ten-grain doses, being well tolerated by the stomach, was given at intervals of two hours, the chills returning daily, though slightly modified in length of attack.

*March 7.* The hyposulphite was continued up to this date, and proved totally inefficient, notwithstanding its faithful administration. The sulphate of quinia was then directed to be taken every hour until twelve grains had been administered, immediately preceding the hour of attack, 11 o'clock A.M.

*8th.* No chill to-day.

*11th.* John experienced a slight "shake" this morning.

*13th.* Both boys seem entirely well.

*June 17.* Frank again attacked with intermittent, this time assuming the tertian type. Prescribed ten-grain doses of hyposulphite of soda every two hours.

*19th.* No relief whatever. To continue, however, until to-morrow.

*21st.* No chill to-day, sulphate of cinchonia having been given this morning previous to hour of chill, and the sulphite discontinued.

CASE X.—W. L., æt. 49, a debilitated and prematurely old Irishman, came to the office for treatment May 5, 1867, shivering in the cold stage of tertian ague. Ordered twenty-grain doses of the sulphite to be taken every three hours.

*May 7.* The stomach rejected the remedy, causing persistent vomiting. Ordered five grains less at each dose.

*8th.* The decreased dose retained, but patient complains of nausea. To continue.

*9th.* Chill returned late yesterday afternoon, the usual hour having been previously nine in the morning. Abandoned use of the hyposulphite, and prescribed cinchonia sulph., twenty grains to be taken to-morrow morning and the day following.

*11th.* No chill.

15th. Has had no return of the ague.

CASE XI.—P. D., æt. 91, healthy-looking, hale old Irishman. Resides in a healthy neighbourhood.

April 4, 1867. Suffering from intermittent fever, quotidian. Fifteen-grain doses of the hyposulphite of soda were directed to be taken every three hours.

5th. Slight exacerbation this afternoon.

6th. No chill to-day. Continue treatment.

7th. Slight return. To take same quantity every two hours.

8th. No chill; feels very well.

9th. No chill to-day.

13th. Has had no relapse; considers himself recovered.

CASE XII.—W. B., æt. 3; English; pale and serofulous; has periodic attacks of fever, followed by sweating stage, occurring daily at about three o'clock P. M. Saw him first April 7, when the soda salt was ordered in eight-grain doses every three hours.

April 8. No exacerbation this afternoon.

9th. Still improves. Continue treatment.

13th. Found the patient this morning blue and cold, evidently suffering from a well-marked chill. Prescribed sulphate of quinia in solution to be taken this afternoon and to-morrow morning.

14th. Mother says the child seems like a changed being since yesterday. Continue quinia and begin tr. ferri chlor.

17th. Still improves under the iron treatment.

CASE XIII.—M. D., æt. 35; strong, healthy Irishman; suffering from quotidian intermittent.

April 9. Ordered fifteen-grain doses of hyposulphite of soda every two hours.

10th. But slight chill to-day. Continue treatment.

11th. No chill. Continue the medicine at intervals of three hours.

13th. No chill since the 10th. Stop the remedy.

15th. Has had no relapse.

CASE XIV.—C. McC., æt. 22, Irish, suffering from tertian intermittent, occurring at noon, came to the office for treatment April 23, when the hyposulphite of soda was prescribed in fifteen-grain doses every three hours.

April 27. Returned, to report the medicine all taken and the chills "gone."

CASE XV.—E. D., æt. 70 (wife of Case XI.), attacked with tertian ague August 22. The hyposulphite of soda was prescribed as in other cases, and the patient recovered in a few days.

CASE XVI. E. B., æt. 11 months, American born, living in a low, swampy region, of a serofulous diathesis and anæmic, having been under treatment for cholera infantum since Sept. 22, exhibited periodical attacks of fever, occurring every afternoon. The sulphite was here given in three-grain doses every hour.

Oct. 1. Fever checked somewhat. Continue treatment at intervals of two hours.

2d. The fecal discharges, which had previously been very offensive, are much improved; child evidently better.

3d. Fever returned yesterday afternoon as usual, and with as great intensity. To continue remedy every hour.



4th. Notwithstanding the increased frequency of the administration of the hyposulphite, the fever stage was severely marked this and yesterday afternoon. Ordered quinia in solution, one grain every three hours. The stomach intolerant, and child very feeble. Brandy, in five-drop doses every half hour, has been given regularly.

6th. Better; no fever to-day.

8th. Child doing well.

From these cases, briefly noted, may we not gather facts that seem to point to the inefficacy of the anti-ferment in patients depressed and debilitated by constitutional disease and want of red blood? while the perfect success in the other cases would seem dependent upon a naturally strong and robust frame to seize upon the interim furnished, as it were, by the arrest of fermentation for the time being, the recuperative powers being so great as to repel any further septic invasion of the blood, the case going on to recovery and good health.

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ART. V.—*Remarks on the Actual State of Medical Science in Japan.*

By ALEX. M. VEDDER, M. D., late Surgeon U. S. Navy, Physician to His Highness the Prince of Nagato and Suwo.

So much interest is attached to everything pertaining to Japan, that an outline of the state of Japanese medical science, and the position held by its practitioners, can scarcely fail to be acceptable to those curious in regard to what concerns these peculiar people. Insignificant as their acquirements may appear, when viewed by the light of modern science, yet they are really remarkable in holding such a respectable position in Asiatic knowledge; and this all the more from the fact of the peculiar isolation of these people during several preceding centuries.

The Japanese system of medicine is essentially based upon the Chinese, and nearly all medical books are written in the square Chinese character, which is read by all professional men. This system has subsequently been greatly modified by the Japanese themselves, and also by a considerable infusion of European medical literature introduced by the Dutch during the last two or three centuries. Still more recently, medical works translated and printed by the missionaries for the use of the Chinese, have found their way into this country, and are doubtless destined to exert no inconsiderable influence.

There are in Japan no regular schools for medical instruction, but in many cases the son follows the profession of the father, and almost every practitioner has one or more students. A school in connection with a hospital has been for some years past in operation at Nagasaki, and many

native physicians have availed themselves of its instructions. It seems probable, however, that this establishment will soon be discontinued under the recent changed form of government, the Dutch, being the only foreign tongue permitted to be taught in Japan, up to the time of Commodore Perry's arrival, and the first Japanese Embassy to the United States. One frequently meets with native physicians who are more or less acquainted with that language, and who may possess and read a few Dutch medical books. Nearly all foreign medicines are known by Dutch names, so corrupted by Japanese pronunciation that their originals can scarcely be recognized.

The social status of the profession is very fair, and fully equal to what their acquirements or merits entitle them. Physicians carry two swords, mingle freely in the highest society, and their opinions are received with the greatest deference. The Japanese physician receives no fees for his visits, but is paid only for the medicines furnished, each one compounding and supplying his own prescriptions after the manner of the English apothecary. It is, however, by no means uncommon for them to receive an "*honorarium*" after treating a case. As might be inferred from this arrangement, there is no lack of medicine supplied to the poor patient, and it is extremely doubtful whether more harm is occasioned by disease or physic.

As to the professional acquirements of the Japanese faculty, dissection not being at all practised in Japan, and even correct plates of the human structure being seldom seen, the knowledge of anatomy is exceedingly imperfect. Still, they have native names for the viscera, the arteries, veins, nerves, lymphatics, and principal anatomical structures, though topographical anatomy is absolutely unknown. In physiology they are entirely in the dark, knowing, for example, nothing of the sympathetic system of nerves, of histology, or animal chemistry, and attributing to the *liver* very important moral qualities—such as its being the seat of courage, etc. The circulation also is but imperfectly understood, the physician always feeling the pulse at *both* wrists, from an impression that each side of the body is supplied by a corresponding side of the heart, independently of the other. The science of diagnosis is, of course, but little known; and disease, when recognized, is treated entirely by name, and according to certain formulas laid down in the books; for as they are profoundly ignorant of the nature of internal lesions, should the disease prove obstinate, they continue to change their remedies until the patience or life of the patient is exhausted. Very many affections are supposed to proceed from the presence of various living organisms and worms infesting the economy, and going under the general name of "*mushi*." I have seen drawings purporting to represent these terrible creatures, and certainly, were any such existing, should deem them fully capable of producing all the mischief ascribed to them.

The only treatises upon pathology that have come under my notice were certain illustrated works upon tumours, and in these it was evident from the illustrations that the authors had drawn largely upon their imaginations. Most of the medicines employed are of Chinese origin, though of late years many foreign remedies have been introduced, and are largely employed, especially by the physicians in such cities as Osaka and Ledo. The forms in which remedies are exhibited are bulky powders, or decoctions of certain vegetables, and of most forbidding appearance and taste. Musk is universally and largely employed, and, among foreign medicines, iodide of potassium, quinia, phosphoric acid, Hoffmann's anodyne, aqua lauro cerasi, and extract of hyoseyamus, are very extensively consumed, together with many others, the list of which is daily being extended. Much of this medicine is imported from Holland, and from samples that have fallen under my observation, I should consider their principal merit to consist in the low price at which they are sold. Iodide of potassium has proved a great boon to the Japanese, in relieving the pains of tertiary syphilis, a disease of very frequent occurrence in this country, and in the treatment of which mercury is employed so largely and indiscriminately as to be productive of the most disastrous consequences.

Among the people generally but two kinds of medicine are recognized, the *dear* and the *cheap*. Thus, you will be gravely informed that A. died; but then he was poor, and could afford only cheap medicine; while B.'s case, which terminated similarly, is a matter of surprise, since he was supplied with the dearest medicines that could be obtained.

The only attempt at prophylaxis practised by the Japanese, that I am aware of, is in vaccination, which was introduced by the Dutch some thirty-five years ago, and is now pretty generally, but unfortunately not universally practised. It is much to be regretted that this measure is not rendered legally obligatory upon the people, as in no country does small-pox commit more frightful ravages than in Japan; and the number of cases of complete or partial loss of sight from this cause is enormous. No care whatever is taken to prevent its spread by isolation of the patient, but infants suffering from the disease are carried about by the mothers as though affected by a slight catarrh. Hygiene, the sister of prophylaxis, is indeed a sealed book to the Japanese, and its laws are so completely and invariably set aside as to make it appear a matter of calculation. There is no drainage or sewerage ever attempted; houses are built directly upon the ground, cellars being unknown, while the lowest and dampest places are usually selected for their location, where stench abounds that would defy Coleridge in their analysis. Much cutaneous disease is propagated by the barbers and the public baths. Hard, unripe fruit, too, so universally consumed, is productive of an infinite amount of intestinal disorder.

As regards Obstetrics, the practice is, to a great extent, in the hands of midwives, although version, instrumental delivery, and cephalotomy, are

employed by medical practitioners. The use of the forceps is unknown, but, while penning this article, a book has fallen into my hands, upon the subject of delivery by means of a cord whose extremities pass through two perforations in the end of a whalebone blade, which enables the operator to carry the noose to the desired point, where it is slipped by the fingers around the presenting part. A net is also used in connection with this instrument in head presentations, apparently to prevent the noose from slipping too far over. The illustrations in this book were profuse, but not calculated to elicit admiration, either from an artistic or anatomical point of view, as the uterus was represented as an enormous chamber, and the vulva lay in the transverse axis of the body. Even with the aid afforded by the fillet referred to, some deliveries must prove excessively difficult, as one plate represents the operator with his feet braced against the patient's buttocks, while the fillet passed about the neck of the child is firmly grasped in both hands, and such traction exerted as makes it pretty certain that "something must come." Cephalotomy is performed by a knife, whose blade is wrapped for some distance from the hilt, to protect the mother. The infant, upon birth, is tightly bandaged about the chest and abdomen, and not allowed to nurse for two or three days, some mild laxative draught being freely administered meanwhile, in lieu of food!

Of Operative Surgery the Japanese are most profoundly ignorant; they possess but few instruments, and those of very rude construction, but had they the whole modern "armamentarium," the want of anatomical knowledge would prevent them from being of much use. Amputation would, I think, sometimes be performed, if permitted by the patient or his friends, but so prejudiced are the people against it that foreign surgeons have frequently urged its necessity in vain. In cases of fracture, no apparatus whatever for retention is employed, nor any attempt made at reduction, leeches and plasters alone being used to reduce the tumefaction and mitigate pain. In fact, the unaided powers of Nature are relied upon in these cases, and, I must confess, with most unsatisfactory results. I was requested to treat a man, a short time ago, with a simple fracture of the femur, and, although extension by weights was employed, which gave him but little inconvenience, on the thirtieth day he removed the whole apparatus, declaring the cure to be too slow, and expressing surprise at not being at once relieved by the use of foreign internal remedies. The Japanese display either a great want of ingenuity or humanity in having no appliances for the relief of deformities or disabilities. Tenotomy is not practised, or any attempt made, by difference in the height of their clogs, to relieve the inconvenience produced by shortening of a limb. I have never seen a crutch used, or a sling for the arm or breast; indeed, a crutch made at my suggestion for one of the Prince's officers, who had an ankylosed knee-joint from gunshot wound, has been regarded as a miracle

of skill and ingenuity. The medical men attached to the Japanese Embassy to the United States practised most freely upon the credulity of members of the profession there, in their accounts of hospitals at Yeddo, and of surgical operations performed in Japan. I need scarcely say that all these accounts were gratuitous falsehoods, and that there is not such a thing as a native hospital existing in Japan. Venesection is employed to a great extent, and it is a common practice for individuals to be bled at regular periods, much the same as with ourselves some fifty or sixty years ago. The moxa is also used as a counter-irritant on any and every occasion. It is even employed for the relief of a slight colic, and there are very few Japanese whose bodies are not well scarred by this barbarous application. Children of a tender age are frequently thrown into convulsions by the pain of the moxa, and I am cognizant of one instance in which it was freely applied to the soles of the feet of a poor young girl, suffering from slight aberration of mind, occasioned by uterine disorder. In this case it was employed to prevent the patient from walking, and thus save an attendant.

In addition to what might be called the *regular faculty*, and, in some measure, auxiliary to them, there exist two distinct classes of practitioners who gain a livelihood through the aches and pains of the community; these are the shampooers and the acupuncturists, although the latter operation is frequently performed by physicians possessing the requisite knack or tact for its successful accomplishment. Shampooing, as employed in Japan, is not exactly the vigorous backbone manipulation of the Turks at the *namman*, and which makes one imagine that every joint in the body must have been dislocated. It is usually performed after a warm bath, the subject lying extended upon mats, while the operator kneels at his side. The affair consists in sundry blows with the knuckles or tips of the fingers, delivered with great rapidity, as also in kneading, pinching, or rubbing, and is either general, commencing at the head, and working towards the feet, or confined to some part that is to be relieved from pain. Many shampooers are exceedingly dexterous, and the sensation is so agreeable and sedative as to make it enjoyed even by foreigners. The class of people engaged in this business are usually wholly or partially blind, going about the streets feeling their way with a long staff, and holding in the mouth a kind of double whistle, whose sound is to me peculiarly plaintive when heard breaking the silence of a cold winter night. The occupation appears to carry with it a certain degree of respect, and I have been informed that there are "*Amas*," as these people are called, who are of high rank, belonging, perhaps, to the "*Kuge*," or ancient nobility of Meaco, who have had the misfortune to lose their sight.

Acupuncture is very frequently practised, especially in rheumatic affections and sciatica; it is done by means of very long needles of gold or

silver, and of extreme tenuity. These are slowly introduced by a rotatory motion, four, five, or more being sometimes inserted at one sitting. The operation is nearly or quite painless, as I can testify from personal experience, and is performed with great dexterity. Of its effects I need say nothing, as among ourselves it was many years ago practised quite extensively, but it is now, I believe, confined to cases of sciatica, or used in connection with electricity.

It might not be amiss, in the course of these remarks, to add a few words concerning a kindred profession to our own. I refer to Dentistry. This *trade*, for such it may be more fitly considered in Japan, is carried on by a very low class of people, usually peripatetic in their habits, and who carry with them a box covered with brass ornaments, by which their occupation is recognized. Now, the extraction of a tooth by one of these gentry is regarded by the Japanese as a capital operation, and not without reason, if the information given me be reliable, that death (from tetanus, I presume) is not unfrequently the result. The tooth is extracted by the operator's fingers, but not until it has been well loosened by means of a stick and a mallet vigorously wielded. The operation is seldom performed, but I saw some teeth in possession of one of these charlatans that had large portions of the alveolar process attached. In the face of these facts it can scarcely be credited that artificial teeth, sustained by *atmospheric pressure*, have been in use from time immemorial. These teeth are carved out of sea-horse ivory, the molars being plentifully studded with little brass bosses, and the whole strongly mounted upon a base cut from the hard shell of a species of gourd, and carved to conform to the irregularities of the gums and palate. I have several sets of these teeth in my possession; they are not expensive, the very best, a complete upper set, costing about five boos, or about one dollar and sixty cents. Colossal fortunes are not accumulated from dentistry in Japan, as may be inferred from the foregoing.

The fondness of the Japanese for taking medicine is almost incredible. They have the most unlimited faith in its powers of healing, especially if it be of the "takai" or dear variety. This love of medicine amounts almost to a mania with some, and may help to account for the great number of physicians, whose name is *legion*. A few years ago a rather intelligent man called at my office in Yokohama, with some trifling ailment, which I informed him would pass off in the course of a few days, and give him no further trouble. He then asked me if no medicine was to be given him. "None," was the answer; "your case does not require it." "Well," said he, looking around at the furnished shelves of the dispensary, "this is really too bad. I see here medicines of all kinds, blue, white, yellow, and red, many, no doubt, dear medicines, for which I would gladly pay, and now I am truly afflicted at having to leave without getting any, as I may never again have a chance to take foreign medicines."

Whatever the disease a Japanese is suffering from, or however long its duration, no attention to washing or cleanness must be paid during its continuance, and the strictest starvation diet is enjoined. There ensues from this a condition of filthiness and abjectness which renders visits to the poor invalid anything but an agreeable office, especially in cases where a physical examination is demanded.

The supporters of a purely vegetable diet will scarcely derive much comfort from the fact that dyspepsia is decidedly the most common disease in this country; although the people, with the exception of a little fish, consume scarce anything that is not drawn directly from the soil. Doubtless their sedentary existence, and the constant sipping of weak tea at a boiling temperature, contribute powerfully to the prevalence of this affection.

The most ordinary diseases of the Japanese, as I have met them, are dyspepsia, smallpox, syphilis, paralysis, phthisis pulmonalis, and affections of the eyes and skin. The strumous diathesis is almost universal, and complicates most of the cases. The tendency to inflammation, of the acute variety, is very slight, and recovery from the most severe lacerations and injuries is usually effected "*Tute cito atque jucunde.*" Diseases of marked inflammatory character, as pneumonia, or acute rheumatism, are seldom met with. I have seen but one case of gout, which occurred in the person of the Prince of Nagato.

It is painful to reflect that thousands of lives are annually sacrificed, and an incalculable amount of human suffering endured, from sheer ignorance of the first principles of the healing art. Yet these people are not deficient in natural intelligence, and there is no doubt that as foreign relations become more intimate, and progress is made in other branches of human knowledge, medicine will also make advances commensurate with its importance, and provision be ultimately made for competent instruction. Japanese physicians possess, at least, the merit of candour and modesty (in their own country), and to honestly confess ignorance is undoubtedly the first step towards the acquisition of knowledge.

ART. VI.—*Case of Urinary Calculus with a Tooth for a Nucleus; and in which there was a Communication between the Bladder, Ovary, and Rectum.* By GEORGE C. BLACKMAN, M.D., Professor of Surgery in the Medical College of Ohio; Surgeon to the Samaritan Hospital, Cincinnati, etc.

Mrs. —, æt. 36; married when 24 years of age. Menstruation regular and health good until about the age of 21, at which period she began to suffer from pain in the left side, and her menses disappeared for thirteen

months. Her pain was regarded as dependent on uterine disease, and she took large quantities of medicine. On the reappearance of her menses, she first noticed that air escaped from the bladder. She had never suffered from constipation nor from any difficulty about the rectum; but even at the present time (Nov. 1868) air occasionally escapes from the bladder. For many years she passed urine in greater or less quantities per rectum. Never had any urinary trouble until about two months after her marriage. Has never borne children or miscarried. The irritation in the bladder was first manifested by a frequent desire to urinate, and the water was passed in small quantities, with much straining and pain. There was considerable tenderness over the pubic region. At this time she resided in Louisville, and was under the care of Dr. Pyrtle, of that city. On sounding her, he discovered the existence of a calculus, which he extracted in June, 1859. The patient informs me that it was removed in fragments, and a portion with difficulty, as it was "fast," and, on removal, proved to be a tooth. In June, 1860, she informs me, Dr. Pyrtle again removed a similar calculus, with another tooth.

I first saw the patient in December, 1863, and, having learned the previous history of the case, proceeded at once to remove the foreign bodies, which were causing her great suffering, as prior to the first operations. Dr. Muscroft administered chloroform, while I dilated, without difficulty, the urethra to an extent sufficient to admit the passage of a moderate-sized lithotomy forceps, with which I grasped with some difficulty the calculus, as the bladder seemed somewhat contracted at certain points, and was not yielding as under ordinary circumstances. The stone, about the size of a hickory-nut, was at length removed, and the bladder washed out with a syringe. The following day I was summoned in haste, and found the patient suffering intolerable agony; there was very great tenderness over the region of the bladder, but not a drop of urine flowing from the urethra, all escaping per rectum! Leeches were immediately applied over the lower part of the abdomen, and the patient brought under the influence of chloroform, which was continued for a little more than three hours, when, during a violent expulsive effort, a phosphatic calculus, quite as large as the one I first removed, escaped from the bladder, and in the centre of this I found a well-formed incisor tooth. The patient was at once relieved. After removing the first calculus, I examined carefully for others, but failed to detect any; and the discovery made at my second operation (May, 1866), in which I was assisted by Dr. Muscroft, of this city, and Dr. Thornton, of Newport, Ky., explains the position of the calculus and cause of suffering which attended its spontaneous expulsion. After removing a small phosphatic calculus, I detected another at the upper part and left angle of the bladder, firmly fixed in an opening just about sufficient to admit the point of the forefinger. This, after some little effort, I detached and removed, which proved to contain the tooth inclosed. The patient made a speedy recovery, and since that operation has passed no more urine by the rectum. Some few months afterwards she began to pass hair incrusts with calcareous matter, specimens of which are forwarded with this paper. These she removes about once a week, and for the purpose employs a worsted crochet hook. She is satisfied that there is either a piece of bone or another tooth adherent to the upper part of the bladder, as she declares she has often struck it very distinctly. She has about decided to have an attempt made in a short time for its extraction, although as yet it has not given rise to any suffering of note.



In the *American Journal of the Medical Sciences*, July, 1850. p. 183, is the report of a case first published in the *Dub. Quarterly Journ. of Med. Science*, and in which there was a communication between the rectum, bladder, and left ovary, and which throws light upon the condition of matters found in our own case. Many years preceding the woman's death, stones were extracted from her bladder, respecting which Dr. Heslop, the reporter, remarks that he was unable to learn more than that they were smooth, round, and of great beauty. Her husband declared that the patient was positive that she had passed air from the bladder for at least twelve months. She died exhausted from spinal disease, enlargement of the liver, and renal difficulty. In describing the appearances found, it is stated that a tumour about the size of an ordinary orange was seen occupying the position of the left ovary. The adhesions between this body, the rectum, and bladder were so intimate that all these organs were taken out together and carefully dissected. In the bladder, which was of moderate dimensions, there was found a minute opening in the left angle of its superior fundus. The mucous membrane around was minutely granular, and stained of a dark slate colour; a probe was found to pass with the greatest facility from this point into the head of the rectum, which adhered strongly to the upper back part of the bladder. The tumour contained a soft, pultaceous, half-fecal, half-caseous looking matter, and there was a communication with the lower anterior portion of the sigmoid flexure of the colon, which was evidently out of the direct course of the intestinal contents, from the presence of bands and folds in the cavity of the bowel, both above and below the opening. The finger could be passed along the bowel without passing into the abnormal communication. The recto-ovarian did not correspond exactly with the recto-vesical opening, the latter being a little lower in the pelvis, but all were matted together.

In connection with the above, we give the details of a remarkable case reported by Mr. Houston, of Dublin, to the Surgical Society of Ireland, Jan. 14, 1843, and which is published in the *Dublin Medical Press*, Jan. 25, 1843:—

“Dr. Houston exhibited to the society a specimen of ovarian disease, which he had received from his friend Dr. Irwin, of Castleblaney, and of which the progress and final issue were, perhaps, unique. The tumour was as large as an orange. It consisted chiefly of hair, bone, and teeth, and had been extracted from the anus. The patient was a countrywoman, named Dawson, æt. about 50, and the mother of seven living children. For nine years she had been subject to continued lumbar and rectal pains, with alternations of constipation and diarrhœa. For the last two years she has suffered from constant uneasiness, and draining of blood and mucus from the rectum; and in order to allow the bowel to be emptied, she had been obliged, on every occasion of going to stool, to introduce her finger and push aside some resisting body which obstructed the passage. In this state she applied to Dr. Irwin, about eight months ago. After making a careful examination, Dr. Irwin judiciously determined on an attempt at extracting this foreign substance, whatever it might be. He succeeded in pulling a certain amount of it through the external opening, but then found it stopped by a fold of the mucous membrane which embraced it tightly around the centre, where the mass appeared narrowed by a circular contraction. He then divided the mucous membrane with a scalpel at this part, and was pleased at finding the entire mass come away unbroken. The mucous membrane was vascular and relaxed; some bleeding occurred from the wound of the knife, but it was arrested by plugging the rectum. It was through the lateral and posterior wall of the rectum that the tumour made its way into that bowel. The woman quickly recovered, and remains (eight months) quite well in health, and free from any disease or inconvenience in the rectum. Such, Dr. Houston said, was

the account given to him of this singular case by Dr. Irwin; and it now remained for him to describe the tumour, and to offer a few observations on the reasons which would, he thought, justify him in regarding it as ovarian.

"The tumour, when first examined, was about the size of a large orange, narrowed about the centre. It was very heavy and dense, and emitted a fecal odour. One end, the larger, presented an appearance like dried clay, matted together with hairs. The other, somewhat smaller, was equally dense; the latter was covered with a firm, gristly substance, like that of the gums, and presented on one side the enamelled crowns of several teeth. The two pieces were so firmly joined together as to constitute one solid mass. On being macerated for several weeks, the exact nature of the tumour became more manifest. The smaller end (Dr. H. here exhibited the specimen) was found to consist of a perfect organized bone, a sort of misshapen lower jaw, with eleven teeth growing out of it, in sockets, and not in a continuous row, but irregularly jumbled together in one place as close as they could lie. There were two incisors and one canine tooth; the rest were bicuspid and early molars. The teeth were all tolerably perfect, some being a little bent, and others short. The enamelled crowns were sharp and well defined. The larger piece, of which the mass was composed, was of a totally different nature. According to an analysis made by Dr. Aldridge, it consisted of a mass of hairs matted together by ammoniacal magnesian phosphate, biliary matter, and vegetable detritus. It adhered very firmly to the osseous piece, especially to the projecting extremities of the teeth, some of which were broken off with it in attempting a separation of the two portions. This end of the tumour was obviously the more recent production, and, according to Dr. Houston's opinion, must have been formed in the rectum by the slow accumulation of the fecal excrementitious deposits arrested by the hairs and teeth of the primary tumour, which, in being eliminated from the body, had been brought into contact with, and had produced ulceration in, the tunics of the rectum. The operation of Dr. Irwin was, in this case, therefore, only the completion of the last stage of the tedious but salutary effort of nature to the same end."

In the *British and Foreign Medico-Chirurgical Review*, Oct. 1860, p. 550-2, is an abstract of some remarks made by Civiale, before the Academy of Medicine, Paris, and which were published in the *Bulletin* of that Society, tome xxv. The new case reported by Civiale was as follows:—

A woman, æt. 49, and mother of six children, was admitted, exhausted with pain and sleeplessness, dependent upon the presence of stone. Six months previously a calculus had suddenly obstructed the urethra, and was crushed and expelled; and a month later retention of urine had been produced by a tuft of hair, agglomerated by a soft matter, and covered by an earthy incrustation. Soon after her admission a large friable calculus was easily crushed, but, on closing the instrument, it was found to include a hard body, which proved to be a tooth. A few days later two other teeth were withdrawn, and soon afterward another—a portion of bone, and a large amount of stony fragments. The woman rapidly recovered. Civiale adds, that these doubtless proceeded from the ovary, a communication having formed between the cyst and bladder—with this, however, remarkable about it, that there was no disturbance in the health of the patient during the establishment of so important a pathological condition. During the seven months preceding the operation, he states she was perfectly well, her only suffering being caused by the consecutively formed calculus.

A paper was read before the Royal Medical and Chirurgical Society of London, March 13, 1869, by Dr. Robert Lee, in which he gives the details of four cases which had come under his observation, and in which an ovarian cyst contained teeth, hair, and fatty matter. In one of the cases the

patient had large purulent discharges through the urethra, accompanied by small, solid masses, which had much the appearance and character of bone, while others were found to consist of hairs coated with calcareous deposit. After death, the report adds: An ovarian cyst was found communicating with the bladder, and hairs were seen growing from one point of its lining membrane.

Dr. Lee's paper contains a summary of such published cases as he could find, in which ovarian cysts containing teeth, bone, hair, and fatty matter, had been observed; and in an appendix, read March 13, 1860, he gives the details of a case, that of a young lady who had calculus of the bladder, and which was extracted by Sir Benjamin Brodie, in 1840. In this case, with the fragments of the broken calculus, there were found two imperfectly formed human teeth, together with a small portion of bone, of an irregular shape. The case is reported by Sir Benjamin, in his *Lectures on Diseases of the Urinary Organs*, from which, as in our second operation, the calculus was adherent to the fundus of the bladder, and in the extraction of it, it was broken into several pieces. Sir Benjamin adds: "If you refer to the tenth volume of the *Medico-Chirurgical Transactions*, you will find a case and dissection recorded by Dr. Phillips, which fully explains the nature of the case in question. The teeth and bone, being the result of an original malformation of the ovarium, had become attached, by an ulcerated communication, to the mucous membrane of the bladder, and formed the nucleus on which the calculous matter had been deposited. A similar case occurred in the practice of Mr. Warner, and is described in the 49th volume of the *Philosophical Transactions*." Dr. Lee quotes from Dr. Heming's translation of Madame Boivin's work *On the Diseases of the Uterus*, the details of a case in which there was extracted from the female bladder a body as large as a hen's egg, "presenting at one of its extremities a shred of skin, containing hairs and a bone, in which was partly fixed a kind of tooth, resembling a small molar. The communication of the cyst with the bladder was ascertained by the finger passed into the urethra. The person recovered." (Delpach, *Chirurgie Clinique*, tome ii. p. 521.) The same work refers to a case observed by Dr. Paul Manhall, in which the ovary, "containing an extraordinary quantity of hairs and fine teeth, communicated with the bladder." Dr. Lee's paper concludes with a letter from the late Sir William Lawrence, giving the details of a case in which Mr. Abernethy had performed lithotomy in 1816, between which period and 1819, the date of the patient's death, a calculus had formed upon the hairs which had escaped from the ovary into the bladder, and passed spontaneously as the patient was in the act of urinating. Sir William states that during Mr. Abernethy's attendance "as much as a small saucer-full came away; many of the stones were as large as horse-beans, and there was hair amongst them."

In the discussion to which Dr. Robert Lee's paper gave rise in the Royal Medical and Chirurgical Society, reference was made by several of the speakers to the fact that dermoid cysts, found in various parts of the body, have contained hair, teeth, bone, etc., and that cases have been reported in which, even in men, such dermoid cysts had been discovered in the retro-vesical cellular tissue. In the monograph on dermoid cysts, by Professor Lebert, read to the *Société de Biologie* in 1852—for an analysis of which we are indebted to the *North American Medico-Chirurgical Review*, May, 1859—it is stated that M. Jaczenky has seen a cyst of this description make its way into the vagina; and that an abscess opened at

the bottom of the posterior cul-de-sac, and a hard body was discovered in this situation, "which had troubled the husband of the patient very much during coitus, and had also excoriated the cheek of her last child during the act of labour; it was found to be a bone, furnished with two molar and two incisor teeth. The teeth were pulled out, but it was impossible to remove the bone which supported them."

Dr. J. J. A. Salter has published in the *Guy's Hospital Reports*, Third Series, vol. vi., the details of a case of ovarian tumour containing teeth, hair, etc., with remarks. The patient had a tumour on the right side of the uterus, about the size of an orange. After she had been in the hospital for a few days, it is stated that she died of acute peritonitis, caused by the extravasation of a small portion of the contents of a cystic tumour, into which the right ovary had been converted, and which had burst by a very small aperture. Hair, teeth, and bone were found within the cyst. The patient was a married woman, æt. 49, and the mother of several children. Dr. Salter has given an excellent plate illustrating the appearance of the above, and after enumerating the different structures that have been found, from time to time, by different anatomists, he adds:—

"What calls forth these curious developments? Are they the result of conception as it occurs normally in the human subject? . . . All evidence, both negative and positive, . . . militates against the idea: . . . in many instances we have positive evidence that they cannot have been thus produced. . . . These growths are found in the ovaries of virgins. Many such cases are on record: and I myself once made a post-mortem examination of the body of a young lady, of whose maiden purity and of whose physical virginity there could be no doubt. In one of her ovaries were found teeth and hair. But if a disputant should question the evidence of chastity and the proofs of virginity, there is this other fact, which puts the matter beyond all cavil: these developments occur in girls before puberty—before the female organs are susceptible of spermatic stimulation, and when, as yet, gamo-genesis is a physiological impossibility. Such cases are not numerous, but they do occur; and one of the most striking, and one entirely reliable, came under the cognizance of Rokitansky, in a little girl *six years of age*. The parts are now in the Imperial Pathological Museum at Vienna."

In the *London Lancet* of July 30, 1864, Mr. Humphry, of Cambridge, has reported a case in which bone, teeth, and hair were extracted by him from the bladder of a female, aged 38, and healthy, with the exception of the symptoms of stone. The patient stated, however, that from the time of her confinement, seven years before, she had been subject to pains in the left side of the lower part of the body, which were sometimes very severe.

"During the last year she had observed frequent 'settling in the water of red colour, with pieces of flesh.' For the last few months only had experienced pain in passing urine. She said, also, that she had occasionally voided pieces of chalky substance, and once something much like a tooth. The sound came in contact with a foreign body, which was judged to be a stone. I accordingly proceeded to dilate the urethra in the manner above described. After twenty-four hours a small pair of lithotomy forceps were introduced, and soon seized a foreign body which broke; a portion coming away in the forceps proved to be a tooth, like a bicuspid, in a socket of bone. I subsequently seized a larger mass, and having discovered it to be free, broke it with the forceps, and extracted several fragments of bone, teeth, and hair. She recovered quickly, and in a fortnight returned home, stating that she was quite well, though there was still pus in the urine. The bone contained the usual corpuscles. The hairs, of a reddish-brown hue, were mixed up with the bone, and included in it, as if the bone had been formed round them; possibly they may have been insinuated into the smaller orifices of the bone which they occupied. The teeth were like bicuspids and molars; the former with bent, the latter with imperfect, fangs,

and more or less completely inclosed in the bone. They were not arranged in a natural order, nor did the bone present at all the appearance of a maxilla. The fragments are preserved in the museum of the University of Cambridge. . . . I learned that soon after her return home, she began to pass from the urethra pieces of bone, teeth, and masses like chalk. One of the latter, which was shown me, weighed a drachm and a half, and measured nearly two inches in its smallest circumference; it was of irregular shape, quite smooth, with a pinkish exterior. Cutting into it, we found it to consist of an outer friable earthy crust, enclosing a fragment of bone with teeth projecting from it. The woman had lately suffered a great deal of pain, and was much thinned. Mr. Wright had succeeded in dilating the urethra by means of the catgut bougies, so that I had little difficulty in introducing my finger into the bladder. Directed to the left side, it entered a sac communicating with the bladder by a circular opening just large enough to admit the finger, having a soft defined edge. In this sac I could feel a large rough stone. With some difficulty I passed the forceps through the bladder into the sac and grasped the stone. It broke, and repeated introduction of the forceps was necessary to clear the fragments from the bladder. Then the finger found a quantity of the broken stone in the sac, which I contrived, with a great deal of trouble, to bring away by means of the scoop. At length I was satisfied that the sac and bladder were emptied, and washed them out thoroughly with water by means of a syringe. The lining of the sac appeared to be smooth and soft, but uneven, not unlike that of a bladder with rugæ. She recovered without an unfavourable symptom, soon regained the power of retaining her urine, and has remained quite free (for ten years) from any disorder of the bladder. On September, 1855, she was delivered of a very fine child," some eight months after the last operation.

Mr. Humphry adds that there was a great quantity of hairs in this stone, especially in one portion, which had probably formed the centre; but no bone or teeth. The explanation of these cases, he thinks, is, that one of those ovarian cysts, which are known not unfrequently to have bone, teeth, and hair growing from their walls, had ulcerated and discharged its contents into the bladder; that phosphatic deposit from the urine upon some hair remaining in the cyst, formed the stone last removed, and that the clearing of the cyst on that occasion led to the cure.

The remarks of Dr. Houston before the Surgical Society of Ireland, on the very remarkable case brought before that Association, the details of which we have already given, seem worthy of a place in connection with the observations of Mr. Humphry. We copy them as reported in the *Dub. Med. Press*.

"Dr. Houston remarked, that as the woman, the subject of this tumour, still survives the discharge of it, there must remain some doubt as to its source. He thought, however, that its origin had been in the ovarium, and gave a lengthened exposition of the nature, causes, and most common seat of such tumours, with a view of proving from precedent and analogy, that such was the fact. Diseases of this kind were occasionally met in other parts of the body, and even in the bodies of men; but in these cases the tumours rarely consisted of anything more than a fatty substance interspersed with hairs. Respecting such hairs, it was remarkable that they were never found, except in connection with fat, and that they always resembled more the hairs of the head than those of any other part. The occurrence of bone and teeth in such tumours is more rare, and seldom met with, except when the disease has its seat in the ovarium. A case of a tumour containing hair and teeth is related by Scorteggiana as being located in the mesentery of a young woman. Another case is related by the same author of a tumour formed of bone, teeth, and hair, being discharged from the uterus after giving birth to a dead infant. And Osiander reports an instance of an analogous kind to the latter, in which the infant was born alive. In both these cases the uterus itself was most probably the seat of growth of the tumour.

"With the exception of these, and a few others, all the recorded instances of tumours of the nature of that furnished by Dr. Irwin, have been ovarian.

"Dr. Houston here exhibited several specimens of this kind from the museum of the College of Surgeons, and in particular one which had been presented by Dr. Brunker, of Dundalk, in which the ovarium thus changed had, in addition, and perhaps as a subsequent malady, become the subject of dropsy, producing in it enormous enlargement. Dr. Houston stated, that from the observations of pathologists, it would appear that such tumours, in the growth, take the following course: 1st. That a cyst filled with serum is formed, either on the surface of the ovarium, or, what is more common, in its interior; that this primary fluid gives place to a deposit of a substance bearing many of the characters of fat; that out of this grow the hairs; then, that ossific matter is formed; and lastly, that from this bone teeth spring up. He showed still farther that the teeth, which constitute so remarkable a feature in these cases, resemble ordinary teeth in many particulars. Their mode of development is the same. They are formed of capsules and gelatinous pulps; the crowns and enamel are formed first, and the fangs subsequently. The length of time occupied in their formation is perhaps also about the same. A case is reported by Coley in which the growth of an ovarian tumour had been traced to about five years, and where the teeth which had been formed might have been the teeth of a child of about that age. Dr. Houston suggested, that if the commencement of the growth of the tumour in Dr. Irwin's case were to be laid about the period when the patient began to complain of uneasiness, that is, nine years back, the teeth which the tumour presented, which were, in fact, the teeth of a child about that age, were perfectly in keeping with such a view.

"Teeth of different orders are found nearly in the ordinary proportion, and would appear to be formed nearly in the ordinary succession. Milk teeth, without fangs, and which had been pushed away by the secondary growth, have been found floating loose in the fluid of such ovarian tumours. The number of teeth is very various; they are usually few; sometimes they have been found to correspond in number to a good and perfect set. At other times they have appeared, from their number, to represent both primary and secondary sets; and one remarkable case is related by Ploucquet of a female, aged twenty-two, sterile, in whom the ovarium contained upwards of 300 teeth. Dr. Houston then enumerated several cases to show that the functions of reproduction are not necessarily arrested by the presence of such a state of disease. In many of these, women were known to have borne children while carrying tumours of hair, and teeth in one of the ovaria, in which respect the case furnished by Dr. Irwin did not make any exception. The consequences and final issue of such tumours are very various: they usually produce derangements by interfering mechanically with the functions of some of the neighbouring organs; they have been sometimes removed by suppuration or by operation: in two of the cases above mentioned, the tumours and their contents were discharged by the uterus in parturition. A case is reported by Dr. O'Brien wherein two teeth, considered to have been perhaps originally ovarian or uterine, became the nuclei of calculi in the urinary bladder; and were removed by him by operation. (*See Dub. Med. Journ.*, vol. v.) But there is perhaps no case on record of the tumour being got rid of by the rectum in the manner, and with the successful result, that has attended on the case communicated by Dr. Irwin. The only case which at all approaches it, in this respect, is one by Coley, in which the tumour attached itself to the intestine, but in which the individual lost her life by hemorrhage from that spot.

"On the question of the original cause of such tumours in the ovarium, Dr. Houston said that he would state only summarily, the opinions of physiologists on the subject. The idea originally entertained that such teeth were swallowed, has every argument and fact against it. Dawson, in whose ovary so many teeth existed, has to this day almost every tooth in her head, perfect. All such teeth are no doubt formed by growth in the parts in which they are found. Some authors suppose them to be supernumerary parts formed by the same act of fecundation as that which produced the body, in the interior of which they are found. Some suppose them to be the result of impregnation; and that they

are nothing more than an imperfect extra-uterine foetus. Others, again, and among these Meckel, consider them to be the result, not *necessarily* of impregnation, but of an unnatural excitement of the genital organs. It should besides be stated that some German physiologists are disposed to regard such anomalous productions, as having some connection with a morbid state of the brain.

"On the whole, then, judging from the history of the case; from the structure of the tumour being such as is found, almost exclusively, in connection with the ovary; and from the feasibility of such an occurrence as its escape through the channel of the rectum, Dr. Houston thought that no doubt could rest in the mind that the ovary was the source from which it had sprung."

How much more rational, and in accordance with our present knowledge, is the above explanation, than that appended by Dr. O'Brien to the report of his very interesting case of urinary calculi, containing human teeth removed from the female bladder, published in the *Dublin Journal of Medical and Chemical Science*, vol. v., 1834, with illustrations. He cannot understand how teeth could find their way into the bladder, unless introduced by the patient, or, having been swallowed, ulcerated their way through into its cavity. He admits that his own patient never had suffered any abdominal pain, nor had she any indications of the lodgment of a foreign body in the intestinal canal. True, she had lost some of her teeth, but we have already quoted cases in which the teeth were all sound, as in our own case; and after the evidence we have brought together, the solution of these cases can no longer be a matter of difficulty.

#### ART. VII.—*Cases of Great Enlargement of the Stomach; with Remarks.*

By ALFRED L. HASKINS, M. D. Boston.

Two cases of enormous enlargement of the stomach having recently come under my observation, I have thought it would be well to report them, and, at the same time, collect similar cases which I have been able to find recorded in works within my reach. The disease, though rare, deserves, nevertheless, the attention of all pathologists and practitioners. At the height of its development the stomach acquires dimensions truly colossal. It occupies almost the whole of the abdominal cavity, pressing upon the intestines and other viscera, and reducing their volume, and even impinging upon the diaphragm and organs in the thorax. The affection has been described by some authors under the name of dropsy of the stomach, and has even been mistaken for ascites and pregnancy. I will first report the two cases which came under my own observation, and finally give an account of those which I have collected from other sources.

CASE 1.—This case was seen by me in February, 1866. F. R. aged 60 had always enjoyed very good health till two years previously, when she began to feel an uneasy sensation in the stomach. Very soon she noticed that her food occasioned her considerable trouble in its digestion, and she often vomited two or three hours after eating. Her appetite

failed, her strength diminished, and she lost flesh. During the past year she has not vomited so frequently, but every few days has had an attack of very copious vomiting. The vomited matter often contained food which she had eaten some days previously. The bowels have been much constipated. During the past six months the patient states that her abdomen has become much swollen, and she has often felt and heard the movement of the fluid in the abdomen. An examination of the patient disclosed a large crescentic tumour, with its concavity directed upwards, and its convexity downwards, lying in the abdominal cavity. The tumour extended from the epigastric to the hypogastric regions, and from one side of the abdomen to the other. Percussion was everywhere tympanitic, except at the most dependent part of the tumour, where there was dullness. A change in posture of the patient always induced also a change in position of the dullness. Fluids, when drunk, increased the space of dullness. To the ear, held near the abdomen of the patient while drinking, a sound was imparted like that produced by water falling into an empty cask. A sudden impulse given to the abdomen imparted a distinct splashing sound. While under observation, the attack of vomiting came on every few days, after which the patient experienced much relief. Patient had very little appetite, with the exception of a short time after an attack of vomiting. The patient became much emaciated, and extremely weak. The bowels were constipated, and the urine scanty. An examination with the microscope of the vomited matter revealed a great quantity of *sarcinæ ventriculi*. The patient survived but a few weeks after the above history was given.

*Autopsy.*—Upon opening the abdominal cavity, this tumour was found to be, as was thought, an enlarged stomach. Its muscular coat was much hypertrophied. The mucous coat, though somewhat attenuated, presented nothing remarkable. At the pyloric extremity of the stomach was found a carcinomatous tumour, which entirely surrounded the pyloric orifice, and so impinged upon this orifice that it was with difficulty that a small catheter was introduced. The mucous membrane covering this growth was very thin. The intestines were much reduced in volume, and contained but a small amount of fecal matter.

CASE 2.—This case was noted in March, 1867. J. K., aged 35, keeper of a restaurant, states that he has always been a very hearty eater, and a great lover of beer. For several years he has suffered more or less, after eating, from a feeling of fulness in the epigastric region, with frequent regurgitation of food. During the past two years has had frequent attacks of copious vomiting, occurring at intervals of every eight or ten days. The vomited matter has a very bad taste and odour, and often contains food eaten two days previously. After vomiting he experiences much relief, and feels quite well till the recurrence of the next attack. Has observed considerable fulness in the region of the stomach, which is always diminished after vomiting. Does not think that he has lost flesh or strength, and, except at the time of the above-mentioned attacks, feels quite well. Bowels are at times much constipated. Upon inspection of the abdomen, considerable prominence is observed in the umbilical region. Percussion elicits tympanitic resonance, extending from the epigastric to just below the umbilicus; below this point, for the space of two inches, there is dullness. Fluids taken into the stomach increased the space of dullness, and change of position changed also the location of the dullness. A violent movement imparted to the abdomen produced



a splashing sound, which was heard at some distance from the patient. A probang introduced into the stomach descended quite deeply into the abdomen.

This case was considered, by Professor Oppolzer, to be one of gastric catarrh, in which the mucous membrane, and perhaps the other coats about the pyloric orifice, had become thickened, and in this manner offered an obstruction to the passage of food into the duodenum.

CASE 3.—This is reported by Bouillaud, the subject of it being a man who had attempted suicide by swallowing nitric acid. After recovering somewhat from the effects of the acid he was again prostrated, and died in a short time.

*Autopsy.*—The stomach, especially at the splenic end, was found of great size. It filled the left hypochondrium, and the whole of the left side of the abdominal cavity as far as the iliac fossa. The stomach contained about two quarts of thick, chocolate-coloured, offensive fluid. In the greater tuberosity of the stomach the mucous membrane was soft, and in some parts destroyed. The mucous membrane at the pyloric extremity was of a bright red colour. Near the pylorus were two quite deep ulcerations in the process of cicatrization. The orifice of the pylorus was tunnel-shaped, and at the duodenal end not more than a line in diameter. Around the pylorus the parietes were indurated and thickened. The induration extended one and a half inches into the duodenum, and was supposed to be cancerous.

CASE 4.—Andral mentions the case of a woman who entered the hospital complaining of difficult digestion, pain in epigastrium, alternate periods of inordinate appetite, and complete anorexia; acid eructations, nausea and vomiting several hours after eating. At intervals of about every forty-eight hours the patient vomited a large quantity of brownish fluid. The vomiting was without effort, and seemed to be almost a simple regurgitation. Although the patient was at times very hungry, but little food could be taken. After lingering fifteen days in the hospital the patient died.

*Autopsy.*—The colic edge of the stomach was found extending to the pubis. The diaphragmatic edge described a curve, with its concavity turned upwards, and proceeding from the epigastrium to the umbilicus, and then ascending to the right hypochondrium. The stomach contained a large quantity of brownish fluid. The mucous membrane was almost devoid of colour, and very soft; near the pylorus it did not exist. The submucous tissue near the pylorus was four or five times its normal thickness, and the muscular coat was entirely absent. The pyloric orifice was sufficiently large to admit the end of the index finger.

CASE 5.—Andral gives the case of a woman aged 74 years. For a long time she had suffered from indigestion, and occasional vomiting some hours after eating. While under observation the patient did not vomit at all, but rapidly became weaker, and died at the expiration of twelve days.

*Autopsy.*—The stomach was much dilated; its colic edge extended to within two inches of the pubis. The cardiac extremity was adherent to the abdominal parietes by means of old cellular bands. The stomach contained about a quart of grayish liquid. The mucous coat was normal, but the submucous and muscular coats were very much hypertrophied. Towards the cardiac extremity was a large cicatrix, in which the muscular fibres terminated like so many radii. Mucous membrane covered the cicatrix, but it was much puckered. Two inches from the pyloric extremity of the stomach in the duodenum, and obstructing its passage, was a carcinomatous ring with a very narrow orifice.

CASE 6, is also related by Andral. A woman, who had always good health, at the age of twenty-three began to complain of want of appetite, and impeded digestion. After a fright, which occasioned syncope, she began to vomit nearly all her food. The vomiting occurred several hours after eating. One year after the inception of the disease the patient entered the hospital. At this time she presented the following symptoms: extreme emaciation, vomiting some hours after eating, pain in epigastrium, obstinate constipation, and some fever. The patient survived but one month.

*Autopsy.*—The stomach was so enlarged that its lower border extended to

the pubis. It contained a large quantity of greenish-yellow liquid. All the coats of the organ were much attenuated, and its parietes could be easily torn. The small intestines were much diminished in volume.

CASE 7.—Andral reports the case of a man 27 years of age, who from his childhood had been subject to abdominal pains and diarrhoea. He was finally attacked with symptoms of intestinal strangulation, and died after the lapse of twenty-five days.

*Autopsy.*—The stomach was much enlarged. The jejunum was twisted on itself. The duodenum and other viscera were normal.

CASE 8 is reported by Cruveilhier. A man 33 years of age, for eight or ten years had been subject to vomiting a large quantity of glairy mucus. Later, the vomiting occurred periodically every eight or ten days, and was accompanied by coldness of the extremities and epigastric cramp of the most painful character. The matter vomited was very abundant, and so offensive that it was thought that there might be a communication between the stomach and colon. In the matter vomited was to be seen food completely undigested, which had been eaten a week previously. After an attack of vomiting he felt much relieved. In the intervals of the attack the appetite was voracious, the patient often arising in the night to partake of a hearty meal. The bowels were obstinately constipated, and but little urine was voided.

*Autopsy.*—An incision having been made into the abdominal cavity, it was found almost completely filled by the stomach. The enormous sack formed by this viscus was divided by a circular constriction into two parts, one of which filled the right half, and the other the left half of the abdomen. The constriction was situated but a short distance to the left of the pylorus. The stomach contained about three pints of yellowish fluid. The walls of the stomach were three or four times their normal thickness. All the coats participated in the hypertrophy, but the muscular coat was especially thickened, so much so that Cruveilhier was able to isolate the three layers of fibres which constitute this coat, and to study their direction. The mucous membrane was of a slaty colour, and throughout its whole extent, except at the left tuberosity, presented a granular and fretted aspect, and was easily removed from the subjacent tissue. The pylorus was perfectly healthy.

CASE 9.—Cruveilhier gives an account of a woman afflicted with hæmatemesis, and who was thought to have cancer of the stomach. She died suddenly.

*Autopsy.*—At the pyloric extremity of the stomach, and near the pylorus, was a very large cicatrix, upon which were found several ulcers, one of which had perforated a branch of the pyloric artery. The cicatrix divided the stomach into two parts. The left part, which constituted almost the whole of the normal stomach, was about one-third the size of the pyloric portion, which extended far down into the abdomen. The coats of this portion were much hypertrophied.

CASE 10.—Duplay gives the case of a man 54 years old, who entered the hospital with symptoms of disease of the heart, which principally fixed the attention of the physicians. The patient had occasional vomiting, dull pain in the epigastric region, and variable appetite. He died in a short time after entrance, and the following is the report of the

*Autopsy.*—Enormous enlargement of the heart. Upon opening the abdomen no portion of the intestines was visible. The stomach occupied almost the whole of the cavity. It represented a crescent, one of the horns of which was situated in the superior part of the left hypochondrium, and the other in the right hypochondrium. The stomach descended into the hypogastric region, and behind the symphysis pubis. The cardiac and pyloric orifices were quite near each other, and upon the same level. The small intestines were pressed downwards and backwards into the pelvis. The stomach was with care removed from the abdomen, and its dimensions measured. From the cardiac to the pyloric extremity, along the greater curvature, the distance was about one yard. From the same points along the lesser curvature the distance was six inches. From the centre of the lesser curvature to the centre of the greater curvature, along the anterior surface of the organ, the distance was eight inches.

The cardiac and pyloric orifices were perfectly healthy, and presented their normal dimensions and conformation. The mucous membrane presented here and there some dark red spots, but there was no trace of softening.

CASE 11.—Lebert gives an account of a man who, at the age of 39, began to have some trouble in digestion, with occasional vomiting. After some months he got better, but still had some pain in epigastrium, and occasional vomiting. He continued much the same for several years, when the vomiting became more troublesome. It came on several hours after meals. He lost his appetite, suffered from severe pain in the epigastric region, and was obstinately constipated. There was great emaciation and exhaustion. An examination of the abdomen showed the stomach to be greatly enlarged. The patient lingered some weeks, but finally died from exhaustion.

*Autopsy.*—The stomach extended below the umbilicus. Its mucous membrane was somewhat thickened throughout its whole extent. The pyloric orifice was so contracted as hardly to admit the point of the little finger. The mucous membrane at this orifice was about a line in thickness. The muscular layer was more than one-half of an inch in thickness, and was wholly composed of muscular fibre. The serous layer was also somewhat thickened. There was no trace of malignant disease.

CASE 12.—Lebert mentions still another case of a man 46 years of age, who for years had suffered much from trouble of the stomach. He had vomiting, which occurred several hours after eating. During life the stomach was found to be enlarged.

*Autopsy.*—The pyloric orifice of the stomach was so constricted as scarcely to admit a female catheter. All the layers at this point were much thickened.

CASE 13.—Manchart relates the case of a man who had been sick, and scarcely quitted his bed for eighteen years. The malady came on slowly, and almost insensibly. He had occasional vomiting, and at times diarrhœa, and was much emaciated. He died finally, suddenly.

*Autopsy.*—The abdomen was much distended. On section the stomach was found enormously enlarged, and filled with liquid and gas. It descended four inches below the umbilicus. Twelve pounds of offensive liquid were found in the stomach. The coats of this organ were very thin. The pyloric orifice was not contracted.

CASE 14.—This case is given by Hasenohrl. A woman, 50 years of age, had been addicted to the use of ardent spirits. She vomited occasionally, and was very constipated. She became much emaciated, and died from exhaustion.

*Autopsy.*—The abdominal parietes being opened, an immense membranous body was seen extending from the diaphragm to the pubis, and completely concealing the other abdominal viscera. The pylorus was thickened and contracted.

CASE 15.—Chaussier records the case of a man 50 years old, who for a long time had suffered with pain in the epigastric region, especially after eating. He had copious vomiting at intervals of every four or five days, and was much constipated. Urine was scanty; legs œdematous, and abdomen distended. The case was taken for ascites, and the patient was tapped. Considerable gas and several pounds of fluid escaped. After the operation the patient felt some relief, but soon experienced a feeling of terrible anxiety, and died in a few hours.

*Autopsy.*—No fluid was found in the abdominal cavity. The stomach was greatly distended, and contained a large quantity of fluid similar to that which had escaped at the time of the puncture. The pylorus was found to be carcinomatous.

CASE 16 is given by Peebles. A man, aged 31 years, entered the hospital of Beaume in October, 1816, with an affection of the stomach. Patient attributed his trouble to a fall which he had had three years before. He now complained of difficulty in the digestion of his food, a sensation of heat in the stomach, eructation of offensive gas, and obstinate constipation. His appetite was variable, urine scanty, and there was great emaciation. At intervals of every eight or ten days he had an attack of copious vomiting. The abdomen was distended. When the stomach was full of fluid, well-marked undulation could be felt over

the whole abdomen. After an attack of vomiting there was a depression at the epigastrium. Four months after the patient's entrance to the hospital he died.

*Autopsy.*—The stomach occupied the greater portion of the abdominal cavity. The pyloric extremity of the stomach, and the commencement of the duodenum, for the distance of three inches, gave the feeling of a hard tumour, and when this was laid open, a narrow, irregular passage, about one-fourth of an inch in diameter, was exposed to view. Along the passage, which was formed by degenerate mucous membrane, there was neither ulceration nor erosion. The substance of the stomach was soft and easily torn, and the muscular fibres were considerably separated from each other. The mucous membrane was apparently healthy. The intestinal canal was rather narrow.

CASE 17.—Band reports the case of a man 52 years of age, who complained of pain in the epigastrium, vomiting a few hours after taking food, and constipation. Patient attributed his trouble to a powerful emetic, which was taken six months previously. He became much emaciated, and died.

*Autopsy.*—The stomach was of great size. It extended below the umbilicus, and into the right iliac region. The right extremity of the stomach was much contracted for the space of four inches, and very hard. The passage, though much contracted, was pervious. The intestines were much diminished in size.

CASE 18.—A girl, 19 years old, came under the care of Dr. Peebles. She reported that for five years she had been subject to vomiting large quantities of fluid: that the attacks of vomiting occurred at intervals of every two days, and were preceded by a feeling of distension in the abdomen. The patient was greatly emaciated. Sometimes from half a gallon to one gallon of fluid was vomited. She died finally quite suddenly.

*Autopsy.*—Stomach enlarged, all its coats were thickened. The first half of the duodenum was much contracted: it admitted a quill with difficulty. At the pyloric extremity of the stomach was a circular depression about an inch in diameter, and evidently an old cicatrix.

CASE 19.—Morgagni relates the case of a man much addicted to drinking, who often complained of uneasy sensations in the epigastrium. After recovery from intermittent fever he began to vomit his food. He became weak, emaciated, and sank very rapidly.

*Autopsy.*—The stomach was of great length, extending from its usual position to the pubis, and from thence to the right hypochondrium.

CASE 20.—Valentine gives the history of a man 20 years of age, who fell from a height, and received severe contusions on the back. In a few days obstinate vomiting came on. In the course of two months the patient was seized with intermittent fever. Valentine, who now saw him for the first time, found him quite anxious, restless, and with some pain in the epigastric region. After the subsidence of the fever, great distension of the abdomen appeared, and patient vomited a dark-coloured fluid. He lived but a short time.

*Autopsy.*—Stomach was very large, and contained thirty pounds of liquid.

CASE 21.—A man 65 years old, came under Lientaud's care. He had for some time felt unwell. His legs were swollen, abdomen distended, urine scanty, and bowels constipated. On entrance to the hospital he complained of pain and heaviness in the stomach, had nausea, but no vomiting. Ten months after entrance the patient died.

*Autopsy.*—Stomach distended, and filled with fluid. The intestines were much reduced in volume.

CASE 22.—A man, 40 years of age, came under the care of Mr. Anderson. The patient had complained for some time of want of appetite, indigestion, and pain in the bowels. On one occasion he became suddenly very constipated, and it was with difficulty that the trouble was removed. Five months later he had a similar attack, attended with vomiting. He now had a return of the vomiting every evening about nine o'clock. It was only by using injections that the patient could have any operation from the bowels. The patient lingered thus till death.

*Autopsy.*—When the abdominal integuments were laid aside, the stomach was exposed to view, extending from the lower end of the sternum to the pubis, and from one side of the abdomen to the other. The colon, at the sigmoid flexure,

was very hard and thickened, and for the space of three inches its internal diameter did not exceed one-fourth of an inch.

CASE 23.—Morgagni gives the case of a woman, aged 40, who was subject to hysterical paroxysms. She often noticed a tumour in the epigastrium, which at times almost disappeared. She frequently experienced colicky pains in the abdomen. She became greatly emaciated, and died.

*Autopsy.*—Stomach was much enlarged.

CASE 24.—The most celebrated case on record of enlargement of the stomach is that of Jodon, published by Lazare Riviere, under the title of dropsy of the stomach. In the year 1620, a woman, aged 48 years, observed her abdomen gradually increasing in size. She supposed herself pregnant, and at the expiration of several months, finding that she had been mistaken in her supposition, she consulted a physician, who pronounced her dropsical. Medicines were given in vain. The tumour gradually increased to such a size that she was scarcely able to bear her burden. She was at last attacked with fever, great thirst, difficulty in breathing, and died in a few days.

*Autopsy.*—The abdomen was so much enlarged that it was found impossible to inclose the body in a coffin, and an incision was made to allow the escape of the fluids, of which the total amount was about one hundred pounds. The stomach was firmly adherent to the abdominal walls. The cardiac and pyloric orifices were on the same level, and so near that the food might pass from one orifice to the other without falling into the great cavity beneath. Both orifices were in a healthy state. At the orifice of the pylorus was a cyst about four inches in length, and three-quarters of an inch in thickness, filled with a transparent fluid. This cyst completely obstructed the pyloric opening. The internal surface of the stomach was also studded with a great number of cysts, some of which were entire, and others had discharged their contents. The stomach, measured along its greater curvature, was more than a yard in length.

The eight following cases lose much of their interest from the very imperfect manner in which they are reported :—

CASE 25.—Hyeronius Laubius gives the case of a sailor, 30 years old, who was an habitual drunkard. The stomach was four hand-breadths in length, and two in width.

CASE 26 is reported by M. Blancard. A woman had fever, thirst, restlessness, and pain over the whole body. She became greatly emaciated, and the abdomen greatly distended. The stomach was found much enlarged, and contained an immense quantity of fluid.

CASE 27.—Morgagni quotes the case of a young woman whose stomach was so much distended that its fundus was in the hypogastrium.

The three following cases are mentioned by Lieutaud :—

CASE 28 is that of a woman, a hypochondriac, who had complained of heat, difficulty in respiration, and eructations of offensive gas. The stomach was found large, and filled with blood.

CASE 29.—A young man experienced, after eating, some difficulty in respiration, and a swelling of the abdomen, and died in a short time. The stomach was found greatly enlarged.

CASE 30.—A woman appeared to die of intestinal strangulation. The stomach was found six times its normal size.

CASE 31.—In this case, from Valsalva, a woman was seized, after eating, with pain in the epigastrium, and died shortly after. The stomach was much distended, and its mucous membrane somewhat inflamed.

CASE 32.—Christison reports the following case: A patient had long suffered from indigestion and vomiting. The stomach was found greatly enlarged, and capable of containing four gallons of water.

The two following cases of Petrequin are interesting as illustrative of the beneficial effects of treatment :—

CASE 33.—A woman, aged 22, had suffered for many years from indigestion.

She had lived irregularly, and at times had been reduced almost to a state of starvation. In her labour she had been obliged to lean her stomach against a transverse bar, which, she thinks, has aggravated her trouble. On entrance to the hospital the patient complained much of indigestion; her appetite was very fickle, and she was quite weak and emaciated. Every few days she had an attack of very copious vomiting. After vomiting, nearly all the unpleasant symptoms for a time disappeared. The stomach, on examination, was ascertained to be much enlarged. The patient was placed upon a diet consisting almost exclusively of milk, into which ice was grated. She began to improve under this treatment, and left the hospital quite well.

CASE 34 is that of a man 43 years old. He had never been a great eater, or subject to indigestion, though he had not felt perfectly well for several years. The first symptom of the trouble for which he now sought relief was an uneasy sensation in the stomach after meals. This was soon followed by pain in epigastrium, occasional vomiting, constipation, etc. Going into the country, and subsisting for some time upon an almost exclusively milk diet, he returned much relieved. His trouble, however, soon returned; when he came under the care of Petrequin. Upon admission to the hospital, the patient stated that he often distinctly felt and heard the movements of the liquid in the abdomen. He suffered considerably from dyspnoea. This patient also was placed upon a similar diet to the preceding, and at the expiration of a few weeks was discharged quite free from all his symptoms.

CASE 35.—Bamberger observed a case in which, after long-continued pain in the epigastric region, and frequent vomiting of blood, all the symptoms of stenosis of the pyloric orifice and enlargement of the stomach, had established themselves. Everything eaten was vomited; there was extreme emaciation; the feet and hands became œdematous. To the surprise of all, the patient began to improve, and, after some months, was discharged completely restored to health. Excepting a very moderate enlargement of the stomach, there was no other symptom remaining.

In this case, without doubt, the enlargement of the stomach was due to the contraction or hardening of the pylorus from the cicatrization of a perforating ulcer. Later, the orifice was gradually restored to its normal size and condition.

The above comprises a list of 35 cases of enlargement of the stomach. In 23 of the cases, the history of the patients and the results of necroscopic examinations have been given in considerable detail. In 8 of the cases the history of the disease is so meagre that they are of but little value. The remaining 4 cases fortunately did not terminate fatally, and two of them are interesting as illustrations of the beneficial effects of treatment.

With a view to ascertaining the cause of dilatation of the stomach, I will briefly restate the condition in which the stomach and other internal organs were found in those cases which have been more fully reported, and in which there was an examination after death.

*Summary of the Necroscopic Appearances of Stomach, &c.*—In Case 1 the muscular coat of the stomach was much hypertrophied, and the pyloric orifice obstructed by a carcinomatous deposit. In Case 3, the mucous membrane of the stomach was, in some parts, destroyed. At the pyloric extremity it was somewhat inflamed, and contained two quite deep ulcerations. The pyloric orifice was contracted, and its walls thickened and indurated by a supposed carcinomatous deposit. In Case

4, the mucous and muscular coats at the pyloric extremity of the stomach were absent. The submucous coat was thickened. The pyloric orifice was free. In Case 5, there was a cicatrix at the cardiac extremity of the stomach. The muscular coat throughout was much hypertrophied. In the duodenum was a carcinoma obstructing the passage. In Case 6, all the coats of the stomach were thin. A similar condition was found in Case 13. In Cases 8 and 9, the stomach was divided into two parts by a circular constriction a short distance from the pyloric orifice. All the coats of the stomach were hypertrophied. In Case 7, the jejunum was found twisted upon itself. In Cases 10, 19, 20, 21, and 23, there was simple enlargement. No disease of the coats of the stomach or obstruction of the pyloric orifice is recorded. In Cases 11 and 12, there was hypertrophy of all the coats at the pyloric extremity of the stomach. In case 14, the pylorus was thickened and contracted. In Cases 15 and 16, the pylorus was carcinomatous. In Case 17, the right extremity of the stomach was much contracted, and the pyloric orifice narrowed. In Case 18, the first half of the duodenum was much contracted. At the pyloric extremity of the stomach was a large cicatrix. All the coats of the stomach were hypertrophied.

In Case 22 the colon near the sigmoid flexure was much contracted. In Case 24 the mucous membrane of the stomach was studded with hydatids; one larger than the rest passed into the duodenum, obstructing the pyloric orifice.

*Etiology.*—Although obstruction or constriction of the pyloric orifice, or of some portion of the intestinal canal, must be conceded to be the direct cause of dilatation of the stomach in a majority of the cases, yet there are very many instances in which such is not the case. It is contended by some writers that cancer of the pylorus is almost the only cause of the dilatation, but a reference to the above cases shows that in only five of the twenty-three cases reported was cancer of the pylorus or intestines observed. In the great majority of the cases of cancer of the pylorus the orifice is not so completely closed that the contents of the stomach do not find exit into the intestines, and consequently there is little, if any, enlargement of this organ. Corroding substances, like nitric acid, produce a loss of substance in the stomach. Cicatrization afterwards takes place. Should the cicatrix be at the pyloric end of the stomach, the pyloric orifice may be obstructed, and enlargement of the stomach produced in the same manner as enlargement of the left ventricle of the heart is produced by an obstacle to the passage of the blood into the aorta. One such case is reported above. The cicatrization of a perforating ulcer at the pyloric extremity of the stomach may have a similar result. Two cases of ulcer of the stomach, with cicatrization and contraction of the pyloric orifice or the pyloric extremity of the stomach, have been given above. Hypertrophy of the mucous or muscular coats at the pyloric

extremity of the stomach, to such an extent as to diminish the calibre of the pyloric orifice, of which two cases are mentioned, and the formation of cysts obstructing this orifice, of which one case is recorded, may also occasion enlargement of this organ. Distension may be caused by the tumours originating in the liver, pancreas, and other organs, and pressing upon the duodenum or pyloric extremity of the stomach. The same effect may be produced by large quantities of food or drink. It is well known that in some hysterical women the stomach and bowels become much distended. Two cases of enlarged stomach in hysterical patients are given in the above list. In diseases of the brain and spinal cord, in cholera, puerperal fever, and peritonitis, the stomach, at times, has been found much enlarged. In such instances, the dilatation is due to paralysis of the muscular coat. Finally, there are some cases of enlargement of this organ, for which no material cause can be assigned. In such cases there is no obstruction in any part of the digestive canal, and all the coats of the stomach and intestines appear in a normal condition. In some instances this is probably a congenital affection, and in others it arises spontaneously, and may be called idiopathic dilatation.

*Symptoms.*—The symptoms of enlargement of the stomach are generally developed gradually. The patient at first complains of difficulty in digestion, acid eructations, pain in epigastrium, occasional vomiting, and sometimes constipation. In a short time the above symptoms may disappear, and the patient believe himself or herself well. In a few weeks, however, the same or similar symptoms again appear, to remain a short time and then disappear, or at least become diminished in intensity. Thus may the patient drag along for months, or even years, but in the mean time the symptoms have become much more aggravated. The vomiting now occurs several hours after eating, or, when the stomach is much enlarged, at intervals of several days; at which time large masses, even gallons, are expelled from the stomach. The pain in the epigastrium is also increased, and a tumour shows itself in the abdomen, which at times extends below the umbilicus. The appetite is at times very great, and again entirely absent. As the disease advances, the patient becomes much emaciated, the bowels become obstinately constipated, the appetite disappears, the strength fails, and the patient, after months, perhaps years of suffering, finally dies.

*Physical Signs.*—Upon inspection of the abdomen of a person whose stomach is much enlarged, a large crescentic-shaped tumour, with its concavity directed upwards, and its convexity downwards, may be seen lying in the abdominal cavity. The median line generally divides this tumour into two unequal parts, the greater of which lies in the left half of the abdominal cavity. The vermicular motion of the stomach is also sometimes perceptible through the abdominal walls. Percussion produces different results, according as the stomach is wholly or partially filled



with food or liquids. If the stomach be full, percussion will be dull over its whole extent; but if it contain only gas, the percussion will be tympanitic. If the diaphragm is pressed upwards, the tympanitic resonance may extend upwards as far as the fourth rib. If the stomach is but partially filled with ingesta, a change of posture will produce a marked difference in the quality of the sound elicited by percussion. The contents of the stomach, following the law of gravitation, will ever be found in the most dependent position, and will consequently change their position with every movement of the body, and the sound on percussion of the stomach will be dull or tympanitic according as it is performed with the body in the erect or recumbent position, or while lying upon the right or left side. If, while percussion is being performed, a considerable quantity of fluid be taken into the stomach, the space of dulness will be increased; and *vice versâ*, after the contents of the stomach are rejected, the space of dulness is diminished. If a series of rapid movements be imparted to the stomach, a peculiar gurgling sound is often heard, even at some distance from the patient; and if the ear is placed over the stomach of the patient while drinking, a peculiar sound like water falling into an open cask, may be heard.

*Diagnosis.*—With a due consideration of the symptoms as above given, and a careful study of the physical signs, enlargement of the stomach can hardly be mistaken or confounded with other diseases of the abdominal cavity. In these times of medical progress this affection could scarcely be mistaken for ascites, ovarian dropsy, or pregnancy. In cases of doubt a probang may be introduced into the stomach, and in this way the amount of the enlargement may be roughly ascertained.

*Prognosis.*—The course of the disease is generally very long. If the dilatation is not occasioned by cancer of the pyloric orifice, it may continue many years, but in the end terminates fatally. The more the symptoms of disturbance of digestion, vomiting, etc., are combined with the dilatation, the sooner is the fatal termination to be expected. In some cases, where the enlargement may be supposed to depend upon hypertrophy of the mucous membrane at the pyloric orifice, or upon a relaxed condition of the stomach; or, finally, when the dilatation is supposed to be congenital, a more favorable result may be looked for.

*Treatment* —In the great majority of cases the treatment can be only dietetic and symptomatic. The diet, above all things, should be properly regulated. Food should be taken in small quantities, and all indigestible or gas-generating substances should be avoided. The treatment of Pettequin, in the two cases given, would seem to commend itself very strongly. It consists in the use of milk, in which is mixed grated ice. Besides being an excellent diet, it also tends to quiet the vomiting, and produce a tonic effect upon the coats of the stomach. To alleviate the pain, small doses of morphia may be given. Should there be symptoms

of catarrh of the gastric mucous membrane, an astringent, as sulphate of zinc, may be administered; and to patients much reduced in strength, iron and quinine will be serviceable. To correct the obstinate constipation, an enema of tepid water will be found of great value. In most cases, however, a lasting amendment cannot be looked for; the patient, after long years of suffering, sinks at last under the disease.

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ART. VIII.—*On Obstructed Bowel, and its Treatment; with a Case.*

By THOS. H. BUCKLER, M. D., of Baltimore.

H. R., a little boy aged two and a half years, remarkably stout and well developed for his age, having never suffered from the usual diseases of childhood, enjoying the most perfect health, and having had regular bowels up to the time of seizure, was, while running about at play on the morning of the 6th of November, 1868, attacked suddenly with vomiting. Dr. Hartman being called in, prescribed such means as were best calculated to relieve the retching and sick stomach, and on seeing him again that evening, the bowels not having been moved, he ordered an enema, besides other agents calculated to allay the still persistent nausea. On the 8th, Dr. Hartman, recognizing the case as one of unequivocal obstruction, called to his aid the skill of Professor Miltenberger, when appropriate means of relief were still continued.

In consultation with these gentlemen, I saw the case for the first time at eleven o'clock on the night of November 10th, 1868, his condition being as follows: We found the child lying asleep on the abdomen, partly supported by his knees, which were drawn up on the bed. Countenance depressed, with an expression of nausea about the mouth. When awaked and placed on his mother's lap, there was a slight effort to vomit. Pulse 90, open, soft, and regular. Abdomen convex, from distension of the upper intestines with flatus, the greatest fulness being above the crest of the ileum, on the right side. We jointly agreed to put the little sufferer on belladonna and melted lard, the eighth of a grain of the extract of the former being directed every three, and of the latter a wineglassful every two hours, the hog's lard not to be commenced until the little patient had been brought fully under the influence of belladonna, which latter, by paralyzing the muscular layer of the stomach, would render him incapable of vomiting.

The theory of this practice is that while belladonna relaxes spasm in the muscular layer of the intestine, the melted lard, without producing irritation, quietly and smoothly steals its way through and beyond the point of obstruction.

On the following day, the lard not having found its way past the point of obstruction, after five or six wineglasses had been swallowed and retained, the tenth of a grain of Squire's extract of cannabis indica was directed to be given every three hours, and this also failing to give relief, we became convinced that the obstruction could not be due to intussusception, as we at first supposed, but to strangulation or some other obscure cause, not capable of being relieved by therapeutic means.

Seeing that the vital powers were failing rapidly, that the little sufferer could only survive for a few hours at most, and hoping that the secondary lesions might not be found too formidable to admit of recovery, we decided, as the drowning man catches at a straw, to open the cavity of the abdomen, with the view to search for and relieve, if possible, the cause of obstruction. Accordingly, on the morning of the 12th, assisted by Dr. Hartman and Prof. Miltenberger, I opened the cavity of the abdomen by an incision commenced about an inch above the pubis, carried five inches between the linea alba and the left border of the right rectus muscle, and terminated an inch or more above the line of the umbilicus, thereby exposing the omentum and intestines, which at once protruded through the opening. The jejunum, with the upper and middle third of the ileum having been drawn out and turned aside, exposed to view about a tablespoonful of pus and yellowish coagulable lymph, and this being sponged away, the following appearances presented themselves: Jejunum empty as usual, upper and middle third of the ileum completely distended with gas, melted lard, and other fluids, quite down to the very point of obstruction, where was to be seen a knuckle of slate-coloured intestine, inflated to its utmost, and strangulated by a band passing underneath it. Immediately below this the ileum and colon were entirely empty and flattened out, the contraction and narrowness of the former contrasting singularly with its remarkable distension and increased size above the point of obstruction. Traction on the intestine drew the knuckle through the loop which confined it, when instantly this band, which was hollow, being also released from its confinement, became filled with air and fluid, poured into it from the bowel with which it was directly connected. On examination, this hollow band proved to be a diverticulum or *cul-de-sac*, about two and a half inches in length, by an average diameter of five lines, and attached at its cæcal end to the mesentery, just where it joins the intestine, by a strong band the thickness of drawing paper, and half a line in breadth, thus forming the loop before described. This band I divided with scissors, so as to allow the diverticulum which had no mesenteric attachments, to float freely in the cavity of the peritoneum. The intestines were replaced, the opening closed by means of silk sutures, and the little patient placed in bed, where he soon after expired.

Could we have known before inflammation took place, that a knuckle of intestine had been caught and confined within the loop before described, the operation of dividing the band which held the cæcal end of the diverticulum to the mesentery ought to have been attended not only with no more risk, but might probably have been followed by the same signal result as that derived from a division of the crescentic margin of Poupart's ligament, in recent cases of femoral hernia. But in this case the secondary lesions were so grave, the canal above the point of strangulation being almost gangrenous, while the intestine below the obstruction was so shrivelled, besides having its mucous membrane phlogosed to such a degree that after the knuckle was released, the fluids contained in the upper intestine would not pass beyond the clearly-defined slate-coloured line into the narrow but comparatively healthy looking and previously unobstructed portion of the ileum.

Another example of a diverticulum attached at its end to the mesentery,

is reported by Habershon in his work on diseases of the alimentary canal, but in his case, being only an inch and a half long, it was too short to form a trap in which any portion of the intestines could have been caught. In every case of internal obstruction, the lower bowels should be washed out by repeated enemata of warm water. Avoiding drastic cathartics of every kind, a quarter or half grain of extract of belladonna, fluid or in pill, ought to be taken into the stomach every hour, until the usual physiological effects of this drug are made manifest, and when these appear, the patient should be required to swallow a wine-glassful of melted lard every hour or two, until it passes through and beyond the point of obstruction. Had the case of obstruction here described depended, as this condition so often does, on simple spasm in the muscular layer of the intestine, or on twist, volvulus, or intussusception, the results of tonic spasm, the foregoing treatment would doubtless have furnished the most complete relief. I have treated successfully five cases of ileus by this method, and where it fails there can be very little doubt as to the existence of strangulation, or some other condition which can only be relieved by surgical interference, it being essential that the operation be performed before serious secondary lesions have had time to take place.

A diagnosis promptly made, the belladonna and lard treatment might be fairly tried within twenty-four or thirty-six hours from the moment of seizure, but these means failing, ought not the operation of Mr. Hilton for internal strangulation, narrated in the *Guy's Hospital Reports* of 1852, to be revived and put in general practice? Opening the cavity of the peritoneum is not so formidable as at first appears, the necessity for doing so being more urgent for the relief of internal strangulation than where the same thing is done for the removal of ovarian tumours. In the late war, Major S. A. had the lower walls of the abdominal cavity not only torn to tatters, but a portion of them carried away by a fragment of shell, so that the bowels rolled out and were covered with sand and fragments of gravel, on which the wounded soldier had fallen; the surgeon in attendance having washed away these particles, replaced the intestines in the cavity of the abdomen, the wounds healed slowly, provident nature supplied parts which were destroyed, and the Major is now a healthy, active, and industrious man.

Where certain death is in one scale, and a possibility of entire relief in the other, there can be no doubt about the propriety of extreme measures, the successful adoption of which must depend mainly on an early operation, there being no condition in which a delay of over thirty-six hours is likely to lead to more certainly fatal results. The great points are, to operate before meteoric distension of the bowels occurs, as it always does, above the point of obstruction; and not to subject the patient to the influence of hospital atmosphere, if it can be avoided; but rather to remove him to the pure air of some healthy locality, before opening the peritoneal

sac. It is important, also, that the surgeon who operates should not be in attendance, at the time, on cases of erysipelas or hospital gangrene, so as to avoid all possibility of bringing a morbid poison of any kind in contact with the peritoneum.

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ART. IX.—*Relative Accommodation.* By E. G. LORING, M. D., of New York. Read before the American Ophthalmological Society. (With figures.)

It has been considered for some time past as established, that there is a certain amount of independence between the act of convergence and that of accommodation. From this fact there has been a tendency among modern ophthalmologists to look upon the associated action of the ciliary and recti interni muscles as a combination of two separate forces agreeing to act, as it were, in unison, to produce a given object rather than a simple action, composed of two factors mutually dependent upon each other for the means of producing a common result. To such an extent has this idea of independent action been carried, that the term accommodation is now universally applied to the function performed by the ciliary muscle alone. This custom of ignoring the part which the recti muscles play in the normal act of accommodation evidently had its origin in the experiments instituted by modern observers, in order to disprove the assertion that the accommodation was due to the action of the external muscles on the globe of the eye; as well as to refute the theory, propounded by Porterfield, that there was an absolute connection between the convergence of the optical axes and the amount of focalizing power in the eye itself, or, in other words, that "to every degree of convergence there is a fixed and absolute amount of accommodation."

These experiments developed the fact that the action of the ciliary muscle, on the one hand, might be entirely annulled, by actual paralysis, or that artificially produced by atropia, and yet the act of convergence remain undisturbed, while, on the other hand, it has been shown, in one case<sup>1</sup> at least, that all the external muscles may be paralyzed and yet the range of accommodation remain unimpaired. Admitting that the conclusions drawn from both sets of these experiments are true, still, the fact that one element in an associated muscular action may be either partially or totally suspended, while the other continues to perform its usual duty, does not prove that the two can act independently of each other when neither is subjected to any restriction; especially when such restriction

<sup>1</sup> Graefe's famous case, *Archiv für Ophthal.*, B. II., Abth. II., § 299.

has a pathological or artificial origin. This single objection against the arguments advanced above would be conclusive, if it were unanswerable. The answer to this is, that the independent action of the ciliary and recti interni muscles can be proved to exist, when the action of neither is subject to any restriction whatever, that is to say, when the functions of both are at the same moment physiologically perfect. The best proof of this assertion is the fact that a fine object can be placed at a given distance, consequently at a given convergence, and can then be distinctly seen with both eyes, both through convex and concave glasses; showing that the tension of the ciliary muscle can either be relaxed or increased, while the convergence remains the same.

But, admitting that the convergence *does* remain the same while the "accommodation is modified," it does not follow, as would at first sight appear, that this modification of the ciliary muscle is independent of, or unaccompanied by, a corresponding modification in the recti interni, or, in other words, it does not follow that these muscles do not sympathize in the different degrees of nervous impulse to which the ciliary muscle is subjected. On the contrary, *there is reason to believe that for every degree of nervous influence, or increased tension of the ciliary muscle, there is a corresponding and contemporaneous nervous influence or increased tension for the recti interni, even if the optical axes remain fixed.* In order to prove this statement, the following experiment was adopted:—

*Expt. I.*—Emmetropic eyes with normal amount of vision and accommodation were selected. Snellen's test type was placed at 20 ft., and a lighted taper was so arranged as to be at the level of the lowest line of letters (xx), and, as nearly as possible, in the same plane. The eyes being fixed upon the letters, the visual axes were practically parallel and the tension on the interni, as well as ciliary muscle, at the minimum. Binocular vision was proved to exist by means of prisms. Concave glasses of progressively increasing strength were then successively tried, till a glass was obtained with which vision began to be indistinct. A concave  $\frac{1}{16}$  was found to be the strongest glass through which vision was distinct for both eyes. With this glass binocular vision was also apparently perfect, as there was not a particle of diplopia or spreading of the letters or light. This glass represented, then, the amount of relative accommodation which could be called forth independently of convergence; for, as the axes were parallel, the tension on the interni must be at the minimum. If, now, according to the assumption with which we started, every increased tension of the ciliary muscle is accompanied by a corresponding tension of the interni, this increased tension ought to show itself by increased convergence, which would then be expressed by diplopia. Here there was no diplopia; does the assumption fall to the ground? By no means, for if, under the above conditions, a coloured glass was now placed before one eye, diplopia, followed immediately with homonymous images of the flame, separated laterally twenty-three inches. If, now, the images were allowed, by lessening the tension on the interni, to coalesce, and binocular vision again obtained, the letters and light became at once indistinct, showing that by lessening the tension on the interni,

we also lessened that of the ciliary muscle, so that the glasses could no longer be overcome. The same result followed if weaker glasses were employed, only the separation between the images was not so great.

The various trials with the different glasses gave the following results : With  $-\frac{1}{16}$  the homonymous images were separated laterally 23 inches ; with  $-\frac{1}{20}$  12 inches ; with  $-\frac{1}{30}$  3 inches ; with  $-\frac{1}{36}$  the flames overlapped each other. With any weaker glass actual diplopia did not exist, though with  $-\frac{1}{42}$ , if a point of light was used instead of the flame, there was a perceptible widening of the point. The reason that there was no diplopia with very weak glasses was evidently because the tension on the ciliary muscle in overcoming the glasses, and consequently that on the interni, was so slight as not to be appreciable with the coarse test employed.

The fact that the distance of separation of the images corresponded to the strength of the glasses used, is very significant, and highly corroborative of the assertion that for every tension of the ciliary muscle there is a corresponding tension of the recti interni.

The explanation of the above phenomena is very simple. In order to overcome the concave glasses, a certain amount of increased tension is required of the ciliary muscle. This latter contracts under nervous influence, and vision becomes distinct. If it be true, now, that all nervous action imparted to the ciliary muscle is also extended to the recti interni, then the nervous impulse which enabled the ciliary muscle to contract so as to overcome the concave glasses, must extend itself to the interni, and an increased tension of these muscles would then be the result, and the equilibrium existing between the interni and externi, which was perfect before such increase took place, would necessarily be destroyed, and there would then be a preponderance of power in favour of the interni proportionate to the increase of tension in the ciliary muscle. If such a preponderance of muscular power did exist, it ought to show itself under the well-known test of the coloured glass and prism. We place the coloured glass before one eye (both eyes being, of course, still armed with the concave glasses), and homonymous images are the result, proving beyond doubt the existing want of equilibrium.

But it may be objected to the above course of reasoning, that when the eyes simply look through the concave glasses, the tension of the ciliary muscle in order to overcome these, and consequently that extended to the interni, is just as great without as with the coloured glass. If this be so, the equilibrium between the recti interni and externi, which was perfect before any attempt was made to overcome the glasses, would be lost the moment such attempt was made, and the eye would have the same tendency to turn in when the coloured glass was not employed as when it was. This is true, the tension on the ciliary muscle and that communicated to the interni, is just as great, and the tendency for the eye to turn in is also just as great, in the one case as in the other, but this tendency is resisted and overcome

by a factor which is in full force when the eyes are looking through the concave glasses alone, but which ceases to exist the moment the coloured glass is added. This new factor is the intuitive desire for binocular vision. So long as the images on both retinas are equal in intensity, the desire of each eye to perform its share in the common act of vision is so great that every attempt to destroy this by a change in the direction of the optical axes is at once vigorously opposed. As soon as the increased tension in the ciliary muscle (called forth in order to overcome the glasses) is extended to the interni, the change in the visual axes, which would be the natural result, is counterbalanced by the desire for binocular vision, which, in this case, can only be accomplished by the agency of the recti externi, the natural antagonists of the interni. Thus, the equilibrium of the muscles which would have been destroyed by the increased tension of the interni on the one hand, is reinstated and maintained on the other, by a corresponding increased tension of the externi. But as soon as the image on one retina is reduced by placing the coloured glass before one eye, the instigation towards binocular vision is removed; and as soon as the desire ceases, the necessity for the muscular force, by means of which the desire was fulfilled, also ceases; or, more plainly, the externi cease to act. This destroys the equilibrium between the opposing muscles in favour of the interni, and homonymous images are the result. We have only to remove the coloured glass, or, in other words, restore the power, and with the power the desire, for binocular vision and the homonymous images immediately coalesce—thus proving that when the eyes look through the concave glasses alone, there is the same tension on the interni, and the same tendency for the eye to turn in as when the coloured glass is added, but that this tendency is counteracted solely by the desire for binocular vision.

Precisely the same result followed when the experiment was applied for the near as for the distance.<sup>1</sup>

Hitherto we have occupied ourselves in establishing the fact that certain changes in innervation of the ciliary muscle were followed by corresponding changes in that of the interni. But, in order to determine beyond doubt that these two muscular forces are mutually dependent upon each other, we must, strictly speaking, demonstrate the other side of the proposition, viz., that variations in the tension of the interni are followed by corresponding changes in the condition of the ciliary muscle.

*Expt. II.*—I have the power of letting the right eye deviate from parallel axes sufficient to overcome a prism of  $30^{\circ}$ , with the angle out-

<sup>1</sup> In performing this experiment, a good deal of care and some experience is required, in order not to offer any resistance to the eyes following their natural muscular tendency. All intuitive and instinctive attempts at binocular vision must be suppressed, and the eyes left, as it were, to follow passively their own inclinations.



wards. The eyes were, as in the previous experiment, armed with a concave  $\frac{1}{16}$ th, the strongest glass through which vision remained distinct. If, now, the tension on the interni was relaxed so as to allow the right eye to deviate to its utmost, the type (even 200 in 20 feet), immediately became so indistinct that not a letter could be deciphered. Crossed images, separated about three feet, was the result. If these images were now made to approach each other by gradually increasing the tension on the interni, it was found that though the vision improved *pari passu*, it was not till the primary and secondary images coalesced that the type (20 in 20 feet) became distinct. The strong glasses were now laid aside, and numerous trials made with weaker ones. It was ascertained that if the right eye was allowed to deviate to its utmost from the parallel,  $-\frac{1}{80}$  could not be overcome by the left, which still performed the act of vision. If, now, the tension on the right internus was increased, and the deviation thereby lessened, so that the secondary image was separated from the primary two feet instead of three,  $-\frac{1}{36}$  could be overcome. If the tension was farther increased, so that the images were only separated one foot,  $-\frac{1}{24}$  was overcome. By making the images coalesce,  $-\frac{1}{16}$ . Thus proving that different degrees of tension of the interni were followed by contemporaneous variations of tension in the ciliary muscle.

But it may be urged in opposition to the foregoing arguments that in hypermetropia, where the error of refraction is of such a degree as to require about the same amount of tension of the ciliary muscle, as was used by the emmetropic eye in overcoming the concave glasses, and where, at the same time, there was no strabismus, the conditions are precisely the same as those in the experiment; and that as there is increased tension on the ciliary muscle in order to make vision clear for the distance, there ought also to be increased action of the interni which would then destroy the equilibrium of the external muscles as soon as the desire for binocular vision was removed, and this want of equilibrium would then show itself, just as it did in the experiment by homonymous images. While on the contrary it often happens that the equilibrium of the external muscles of hypermetropic eyes is shown to be perfect, even when such eyes are subjected to the test of the coloured glass. But it must be borne in mind that the conditions though apparently the same are by no means identical. Non-squinting hypermetropic eyes have, by long-continued practice, become so accustomed to meet, and successfully resist, the tendency to turn in under accommodative efforts for parallel rays, that an increased tension on the interni, counterbalanced by an increased tension on the externi, may be considered as the normal condition for such eyes, for distant objects. In other words, though the tension of the external muscles of the globe is greater the equilibrium between them is as perfect as in emmetropic eyes, and we have no more right to expect that the coloured glass will show a preponderance of muscular power in hypermetropia, where none exists, than in emmetropia, where there is perfect harmony between the muscles.

Now, in order to make the conditions which obtain in such hypermetropic eyes parallel with those in the example, we must bring forth an

amount of accommodation over and above what the hypermetropic eye has been in the habit of using with parallel axes, or, in other words, bring forth the maximum amount of relative accommodation corresponding to this position of the optical axes. We do this by employing the strongest concave glass which such eyes are capable of overcoming with parallel axes and yet maintain binocular single vision. The additional efforts then made by the ciliary muscle to overcome the glasses, ought to be followed by an increased tension on the interni. This would destroy the equilibrium in favour of these muscles and the preponderance of muscular power, kept in abeyance by the desire for binocular vision, would show itself the moment this latter was removed or even lessened. This is the fact, for as soon as the coloured glass is put up homonymous images follow. Of course here, as in the former case, all intuitive desire towards preserving binocular vision by opposing a counterbalancing muscular force must be completely subdued and the eyes left to follow passively the natural muscular tendency.

That there is a strong tendency for *all* hypermetropic eyes to turn in, is now so well established as to need no comment whatever. The reason why some do not is evidently because the equilibrium between the muscles is maintained by an increased exertion on the part of the externi.

When, however, from the error in the refraction the demand on the ciliary muscle and, as a consequence, the tension on the interni, are so great that the strain can no longer be resisted by the externi, the want of equilibrium then shows itself by homonymous images without the accommodation being incited to increased action by concave glasses. This fact is well illustrated by the following examples:—

CASE I.—Miss A. H., æt. 18, has some of the symptoms of asthenopia from hypermetropia. Letters, however, only occasionally become indistinct, and the pain is rather in the eyeball than over the brow; this pain is moreover constant. The patient has given up all use of the eyes, but finds no relief from rest. Manifest hypermetropia =  $\frac{1}{50}$ . Vision in both eyes equals 1. Accommodation =  $\frac{1}{5}$ . The ophthalmoscopic examination shows a slight atrophic crescent round the optic nerve, which is slightly congested, otherwise the fundus appears perfectly normal. There is no insufficiency of the interni recti; on the contrary, there appears to be some weakness of the externi as homonymous images are called forth by placing a coloured glass over either eye without the addition of a vertically displacing prism. At 20 ft. distance these images are made to coalesce by a prism  $7^{\circ}$ , base outwards. The images retain their distance of separation to whichever side the flame is moved. If the candle is gradually brought towards the eye the distance between the images decreases *pari passu* till these combine at 24 inches from the eye. At 12 inches images produced by the prism and coloured glass are exactly vertical, showing perfect equilibrium between the recti muscles. At 24 inches the images begin to grow homonymous and the distance between them increases till at 20 feet they are separated “about 2 feet.” The patient has never seen double, and can only do so with the red glass.

As the patient could not, after a continued trial, relax the accommodation for more than  $+\frac{1}{50}$ , and as the vision and total range of accommodation were so good, it was thought that idiopathic weakness of the recti externi must be the cause of the asthenopic troubles. As if in corroboration of this opinion, the examination of the muscles showed that the power of abduction at 15 inches was only equal to a prism of  $5^\circ$ . Thorough paralysis of the accommodation, however, revealed total hypermetropia,  $\frac{1}{10}$ . With these glasses the homonymous images no longer existed.

CASE II.—L. K., æt. 19, suffers from asthenopia, the principal symptom of which is "blurring" while engaged on close work. The patient has no pain in the eye or over the brow, but has suffered much from "general headache." There is no manifest hypermetropia and vision equals  $\frac{2}{3}$ . Accommodation =  $\frac{1}{6}$ . The patient sees homonymous images with the coloured glass, without any displacing prism, separated at 20 feet, 18 inches. These images combine when the candle is brought to a distance of 4 feet from the eye. A prism of  $7^\circ$  base outwards reduces the diplopia for the distance. At 6 inches, images produced by a prism, base upwards or downwards, are vertical, from this point outward, homonymous. The patient has never seen double, and can only do so with the aid of the coloured glass. Thorough paralysis of the accommodation shows total hypermetropia =  $\frac{1}{8}$ . Through this glass the candle is seen distinctly, and the double homonymous images, which were present before the accommodation was paralyzed, have entirely disappeared, and the equilibrium of the muscles is perfect. After the effect of the atropia had passed off  $+\frac{1}{18}$  was ordered, as this was the strongest glass which the patient would tolerate. Three weeks later, through  $+\frac{1}{14}$  (the coloured glass being placed over one eye), there was no diplopia; but if the spectacles were raised over the brow while the coloured glass still remained before one eye, double homonymous images followed at once, which again immediately disappeared as soon as the glasses were lowered again.

CASE III.—E. W., æt. 45, has all the symptoms of asthenopia from hypermetropia.  $Hm = \frac{1}{18}$ .  $V = 1$ .  $A$ , normal. With the coloured glass and no spectacles the patient sees homonymous images, separated 10 inches in 20 feet. With  $+\frac{1}{18}$  the diplopia ceases, and a vertically displacing prism then gives vertical images. If the spectacles are raised, however, double images follow at once, and it requires a prism of  $6^\circ$  base outwards to make them combine.

CASE IV.—C. J., æt. 15.  $Hm = \frac{1}{30}$ .  $V = 1$ .  $A = \frac{1}{5}$ . The patient sees homonymous images, separated 8 inches in 20 feet. With  $+\frac{1}{30}$  double images disappear.

CASE V.—A. T., æt. 10, has all the symptoms of asthenopia from hypermetropia.  $Hm = \frac{1}{13}$ .  $V = 1$ .  $A$ , limited. The patient sees homonymous images, which combine at 20 feet with a prism of  $9^\circ$ . With the glass which corrects the manifest hypermetropia ( $+\frac{1}{13}$ ) the images approach each other very much, while without it they are widely separated. The accommodation was paralyzed, and the total hypermetropia found to be equal to  $\frac{1}{6\frac{1}{2}}$ . Through  $+\frac{1}{6\frac{1}{2}}$  there was no diplopia.

From the above it would follow that not only are the demands on the ciliary muscle greater for the distance in hypermetropia than in emmetropia, but that there is also an amount of labour imposed both on the interni and

externi recti muscles in the case of non-squinting hypermetropic eyes, which does not exist at all in the normal organ ; and furthermore, that the amount of this increased taxation on the external muscles is proportionate to the error of refraction, always provided that the attempt is made to neutralize the hypermetropia by accommodative efforts.

But it may be suggested that in the above cases there might have been some idiopathic weakness in the externi, which would have then showed itself, by the test employed, by homonymous images, independently of accommodative efforts. That there was no such weakness, and that the homonymous images were solely due to the act of accommodation, is proved by the fact that the diplopia disappeared the moment the strain on the ciliary muscle was removed by atropia or convex glasses. At the same time, I would not wish to imply that weakness of the externi recti, analogous to that of the interni, might not even occur, for I have myself seen cases of it. That such weakness would more frequently occur in hypermetropia, can be readily understood.

The fact that homonymous images do not appear in all hypermetropic eyes, when subjected to this test, does not prove that the nervous impulse, by which the error of refraction is overcome, is not propagated to the interni. It only proves that the equilibrium is preserved between the muscles, and shows simply that we may increase the tension on the interni indefinitely, provided this is met and counterbalanced by an increased tension on the externi. In other words, the desire for binocular vision and the power to maintain it are so great in some hypermetropic eyes that they are unable, as it were, to give it up even under the greatest pressure of accommodation. But this difference in desire for binocular vision is just as well marked in emmetropia as in hypermetropia, as is shown by the great variations in the amounts of abduction and adduction which perfectly normal eyes often show ; some eyes not being able to overcome prisms of very low degree for the sake of preserving binocular vision, while others can overcome those of a very high degree.

While, on the other hand, the fact that with some hypermetropic eyes homonymous images *are* present so long as accommodative efforts are going on, and disappear as soon as these efforts stop, *does* prove that the tension of the ciliary muscle was propagated to the interni, which gave them a balance of power, which balance of power ceases as soon as the action of the ciliary muscle ceases.

Again, given a case of hypermetropia =  $\frac{1}{20}$ . When the eyes are subjected to the test no homonymous images follow, although accommodation is going on. On the contrary, vertical images are produced by a prism with the angle upwards or downwards. This proves that the equilibrium between the muscles is perfect. But granting the equilibrium be perfect, it does not follow that the action of the ciliary muscle is not imparted to the interni, and that this is not in turn counterbalanced by the externi.

On the contrary, there is reason to believe that this is exactly what does take place; for if the hypermetropia is increased by adding  $-\frac{1}{20}$ , making  $H = \frac{1}{10}$ , homonymous images appear. By adding the glass we increased the tension on the ciliary muscle; this was shared in by the interni, whose tension was thereby so much increased, that the externi could not or would not, for the sake of binocular vision, longer resist the strain, though they were able to do it while  $H$  equalled only  $\frac{1}{20}$ . If, in some hypermetropic eyes, in emmetropic eyes made hypermetropic, in hypermetropic made more hypermetropic, we get homonymous images, showing a preponderance in favour of the interni, is it not more rational to think that there is increased action of the interni, counterbalanced by an increased action of the externi in *all* hypermetropic eyes, even for parallel rays, than to believe that the ciliary muscle acts alone without the coöperation of the other muscles for distant accommodation? Again, if the connection between accommodation and convergence is simply an acquired one, would it not be more natural for a hypermetrope to learn to oppose the increased tension on the interni by a corresponding tension on the part of the externi, the latter being the natural antagonists of the former, than to learn to use the ciliary muscle alone for parallel rays, and in coöperation with the other muscles, for all other rays. If hypermetropes can learn to use the ciliary muscle thus independently, why cannot they go a step further and learn to use the ciliary muscle of *each eye* separately, and thus neutralize the discrepancy in refraction, a thing which, as far as modern science knows, has never been accomplished, even in the smallest degree.

From the fact that the amount of accommodation increases with the degree of convergence, it has generally been considered by modern ophthalmologists that the strabismus which occurs in hypermetropia is due to an independent action of the recti interni, for the direct and specific object of giving assistance to the ciliary muscle, and thereby increasing its power. I cannot help thinking that this view of the matter is wrong, and believing that the *initial step* in the strabismus following accommodative efforts in hypermetropia is solely due to the fact that the recti externi have not sufficient force to counterbalance the increased tension imparted to the interni by the same nervous impulse which enables the ciliary muscle to overcome the error in refraction. While, on the other hand, whenever the power of the externi is sufficient to resist successfully the increased action of the interni, while accommodative efforts are going on, there will then be no strabismus, however great the error in refraction may be. How else do we explain the fact, that of two persons, each of whom has the same amount of vision, the same degree of hypermetropia, and exactly the same range of accommodation, one will squint, and the other not? As the range of accommodation and acuity of vision are the same in the two cases, the eyes of both must be equally strong; and as the error of refraction is the same, the same amount of strength must be expended by each

in overcoming the anatomical deficiency, and yet there is strabismus in the one case and not in the other.

It would appear also more rational that that peculiar form of strabismus known as intermitting, which only makes itself apparent in a condition of general debility, should be referred rather to want of power in the externi, than to a direct increase of it in the interni. The occupation of the patient, and the optical condition of the eye being the same in a state of temporary weakness as in a state of health, there will be the same motive and the same necessity for accurate accommodation in the one case as in the other; while, on the other hand, the desire for binocular vision decreases with the obstacles placed in its way, and as this was barely maintained by the exertions of the externi while in full vigor; and as, too, there is no absolute necessity for binocular vision as there is for accurate accommodation, imperfect and perhaps painful vision with the two eyes is willingly discarded for distinct and easy vision with one.

Very much more might be said in relation to this interesting point, but it would be beyond the scope of the present remarks.

Hitherto parallel visual axes have been selected as a basis for the experiments used, and the conclusions deduced from them, as in this position of the eyes the tension on the recti interni and ciliary muscles must be at the minimum.

The following experiments and accompanying remarks relate to the action of the recti and ciliary muscles under a convergence of the optical axes. Modern ophthalmologists have denied the old idea that the connection between convergence and accommodation is absolute, so that to every degree of the former there is a fixed amount of the latter. It is now considered settled beyond a doubt that a certain independence exists between these two muscular forces; and for the proof of this independence two assertions, alleged to be indisputable, are brought forward:—

1. That the accommodation may be altered, and yet the convergence remain the same.
2. That the direction of the optical axes may be changed without modifying the accommodation.

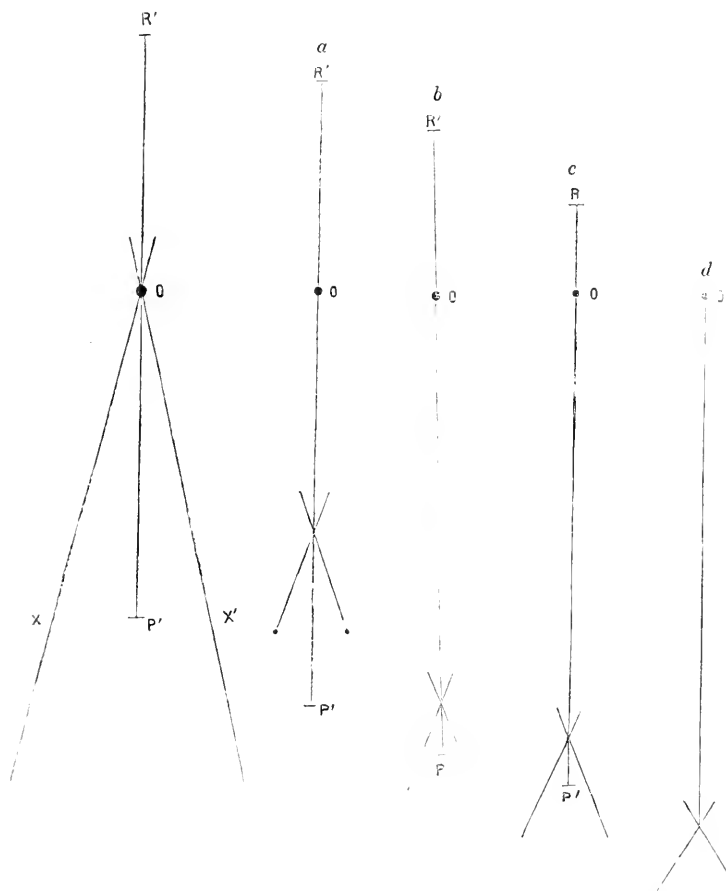
As the whole idea and very existence of relative accommodation depend on the correctness of the above statements, we propose to examine them somewhat in detail.

The first question which naturally presents itself is, whether the assertion that the “accommodation can be modified while the convergence remains the same,” be true?

The best argument in its favour, and one which has been universally accepted as conclusive, is that contained in the experiments made by Donders with convex and concave glasses, by means of which he established the amount of accommodation for the different degrees of convergence, from parallel visual lines to a distance of about two inches from

the eye. As the admirable diagram, with which he illustrated his experiments, is more elaborate than is necessary for the present purpose, the same principle has been applied to a single degree of convergence. In this diagram (Fig. 1) the eyes are supposed to be converged upon an

Fig. 1.



object at 18 inches from the eye. The visual axes are represented by  $x$  and  $x'$ ; the object viewed consisting of small type, is situated at their point of intersection, and is denoted by  $o$ , which, as the accommodation is adjusted for that distance, is seen with distinctness. Now, the strongest convex glass through which the object  $o$  still remains distinct, shows the amount that the ciliary muscle can be relaxed at this definite degree of convergence, and is represented on the vertical line as extending from  $o$  to  $r'$ . This is known as the negative portion of the relative accommodation, and in this case was equal to a convex  $\frac{1}{20}$ . On the other hand, the strongest con-

cave glass, through which  $o$  still remained distinct, shows the amount of accommodation which can be brought forth by increased tension or muscular effort, and is represented by the distance from  $o$  to  $p'$ . This is called the positive part, and in this case equalled a concave  $\frac{1}{14}$ . The sum of the two,  $\frac{1}{14} + \frac{1}{20} = \frac{1}{8}$ , represents the amount of variation of which the accommodation is capable, with this fixed and invariable degree of convergence.

From this it is plain, that no doubt can exist about the actual variations in tension of the ciliary muscle under the influence of the glasses; the only question which can possibly arise is, whether such modification is not accompanied by a change in the position of the visual lines? Here, too, it must be admitted as actually proved, that there is no change in the optical axes, even when the ciliary muscle is compelled by the glasses to pass from its maximum state of relaxation to that of its maximum tension. We are, then, compelled to accept as true the assertion that "the accommodation may be modified, while the convergence remains the same."

This brings us to the second, and, as it were, correlative assertion, brought forward in support of relative accommodation, viz., that the convergence can be altered, and yet the accommodation remain unmodified. Here, too, the best proof of this statement is that furnished by the simple experiments made by Donders with prisms, by the use of which, to use his own words, "we easily convince ourselves that an object can be accurately seen with both eyes at the same distance, and that, consequently, the convergence may be altered without modifying the accommodation."<sup>1</sup>

There can be no doubt whatever in regard to the truth of the statement that an object can be distinctly seen with both eyes at the same distance through prisms of various strengths, whether the angles be turned inwards or outwards, and, consequently, under different degrees of convergence. But, does the fact that the object *can* be so seen, prove that the convergence may be altered without "*modifying* the accommodation?" We think not; and it is to prove that this last statement is incorrect that the following experiments were made.

Precisely the same conditions as those represented in Fig. 1, were taken. Here it will be remembered that the strongest convex glass through which  $o$  remained distinct was  $+\frac{1}{20}$ , and its value was represented on the vertical line as extending from  $o$  to  $r'$ . On the other hand the strongest concave glass was  $-\frac{1}{14}$ , and was represented as extending from  $o$  to  $p'$ . If now, as Donders affirms, the convergence may be altered without *modifying* the accommodation, then we may change the direction of the visual axes, and yet the object will still be distinctly seen through the same glasses both convex and concave, as these are in fact but the representations of

<sup>1</sup> Accommodation and Refraction of the Eye, p. 111.



the accommodation. In other words, we may alter the direction of  $x$ ,  $r'$  and  $x'$ , and yet the points  $r'$  and  $p'$  will remain the same. We change  $x$  and  $x'$  by placing a prism, of say  $5^\circ$ , angle inwards, before each eye, which increases the convergence from 18 inches to about 12, while the object still remains perfectly distinct. If now we have not modified the accommodation, we ought on the one hand to be able to allow it to relax for  $+\frac{1}{20}$ , and on the other hand, be able to overcome a concave  $\frac{1}{14}$ . But we find on trial that the object appears indistinct through  $+\frac{1}{20}$ , the strongest glass for which the accommodation can be relaxed being  $+\frac{1}{24}$ . While on the other hand we find that we cannot only overcome a  $-\frac{1}{14}$  but even a  $-\frac{1}{11}$ , so that the amount of relative accommodation with the prisms is equal to nearly  $\frac{1}{7}$  instead of, as in the former case,  $\frac{1}{8}$ .

The various changes which have followed the alteration of the convergence by the prisms are represented in Fig. 1, diagram *a*. The optical axes  $x$  and  $x'$  intersect each other nearer the eye.  $r'$  the relative far point, and  $p'$  the relative near point, descending on the vertical line, have approached the eye, while  $o$  being a fixed object has remained stationary, and it will be seen that  $o$ , instead of lying at the point of intersection of the optical axes, and just at the line of division between the positive and negative parts of the relative accommodation, now lies in the upper half of the negative. By increasing the convergence we have not only displaced the relative accommodation but also increased it; while at the same time we have changed the proportion between the positive and negative, so that the latter predominates over the former, which is just the reverse of what it was before the convergence was increased. All these changes in the condition of the relative accommodation are exactly similar in kind, and very nearly identical in degree with those which would have followed had the eyes been converged to 12 inches, naturally, instead of by means of prisms.

If, now, instead of prisms the united angles of which amount to  $10^\circ$  we use those which amount to  $20^\circ$ , we see exactly the same changes taking place, differing only in degree. Fig. 1, diagram *b*. Here  $+\frac{1}{30}$  is the strongest convex glass through which the object remains distinct, while on the other hand  $-\frac{1}{10}$  can be overcome, making the entire relative accommodation equal to  $\frac{1}{7}$ .

In diagram *c*, where the united angles of the prisms equal  $25^\circ$ , the convex glass is  $\frac{1}{50}$ , and the concave  $\frac{1}{25}$ , the entire relative A being  $\frac{1}{8}$ .

In diagram *D*, where the united angles of the prisms equal  $30^\circ$ , the accommodation could not be relaxed even for so weak a glass as  $+\frac{1}{80}$ , as was shown by the fact that vision was made indistinct by it.

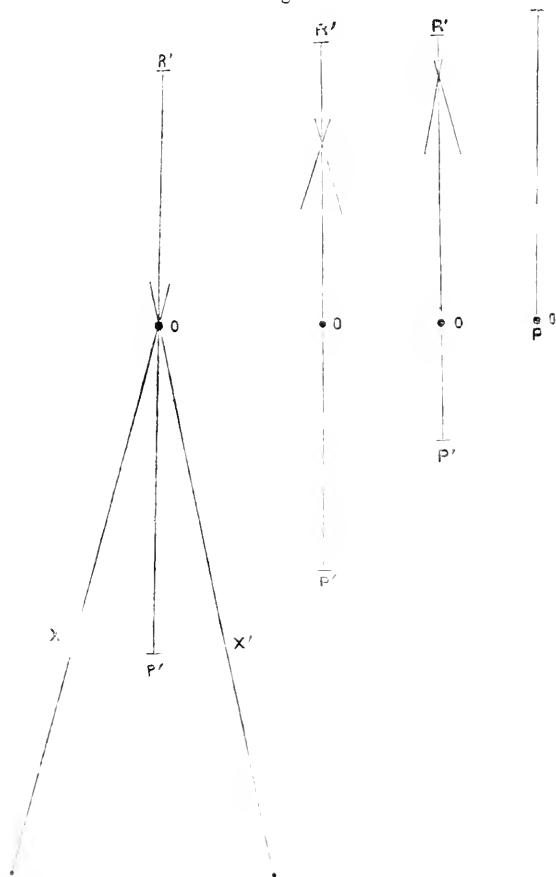
It will be seen that the positive part of the relative accommodation has become successively smaller through the series of diagrams from A to D, in which it has no existence at all, the relative A being consequently all

negative. And it will be observed, too, that whereas the object  $o$ , in Fig. 1,  $a$ , lay at the very beginning of the negative portion, in  $d$  it lies at its furthest extremity.

If, now, instead of increasing the convergence by turning the angle of the prisms inwards, we lessen it by placing the angle outwards, a result identical in kind follows, only the optical axes intersect further from the eye, and the relative accommodation is likewise removed and the proportions between its negative and positive portions modified.

Fig. 2 represents the various changes produced by the prisms, the angles being here placed outwards. Weaker prisms are employed in this case as

Fig. 2.



the optical axes are rendered parallel by prisms, the united angles of which amount to  $15^\circ$ , consequently those were used whose united angles amounted to  $5^\circ$ ,  $10^\circ$ , and  $15^\circ$ , instead of as in the former case,  $10^\circ$ ,  $20^\circ$ ,  $30^\circ$ .

It will be seen that just as  $o$  was, in Fig. 1, always within the nega-

tive portion of the relative accommodation, so here (Fig. 2) it is always within the positive, and just as  $r'$  in Fig. 1, with increased convergence it gradually descends to  $o$ , so in Fig. 2,  $p'$ , under diminished convergence, it ascends to  $o$ .

The weakest glass through which any appreciable effect was obtained was  $2\frac{1}{2}^\circ$  over each eye, but this effect was too slight to be represented in a diagram on so small a scale in Fig. 1. Moreover, in this case, a minute point of light was used instead of small type.

Now it is very true that the object "has been distinctly seen at the same distance with all these different degrees of convergence," but it is not true that the accommodation has not been modified; for, with every alteration in the convergence, there has been a palpable and computable modification of the accommodation, equalling, in the aggregate, to a convex glass of  $\frac{1}{8}\frac{1}{2}$ .

The reason why the object  $o$  remains distinct while the convergence is changed by the prisms, is, then, not because the accommodation has not been modified, but because the object remains within the limits of such modification, or, in other words, within the *region* of the relative accommodation, notwithstanding the alteration in convergence.

From Fig. 1 it becomes evident that the convergence may be increased at pleasure, and yet the object will be distinctly seen so long as it remains in the region represented by the negative portion of the relative accommodation, that is, till  $r'$  descends to  $o$ ; while, on the other hand, Fig. 2 shows that the convergence may be diminished till  $p'$  ascends to  $o$ . When, however, in either case,  $o$  remains outside of the limits of the relative  $\Delta$ , it at once becomes indistinct.

From the above experiments it would appear to have been satisfactorily demonstrated that the statements made by Donders, in regard to relative accommodation, are in part correct and in part incorrect; for it is true, as Donders asserts on the one hand, that without change of convergence the accommodation may be modified, but it is not true, on the other hand, that the convergence may be altered without modifying the accommodation; or at least his experiments do not prove it.

It certainly seems strange, and even contradictory, at first sight, that the action of the ciliary muscle, even when excited to a considerable degree, should not affect the convergence, while even a slight change in the optical axes does affect the ciliary muscle. But it must be borne in mind that the conditions in the two cases are very different. The intimate connection between the action of the ciliary muscle and the recti interni has been shown in the preceding part of this paper, and formulated in the proposition that "to every increased action of the ciliary muscle there is a corresponding increased tension of the interni;" and it was fully explained that the only reason why the convergence remained unaltered while the ciliary muscle was incited to increased tension by means of concave glasses, was because

the increased tension imparted to the interni, which would turn the eyes, was counterbalanced by the antagonistic muscular contraction of the externi, incited by the intuitive desire for binocular vision. The result of which is that the ciliary muscle has a certain freedom of play or range of action, independent of any change in the optical axes. But, on the other hand, the ciliary muscle, having no antagonist, and there being no intuitive desire to call forth the action of such antagonist did it exist, naturally assumes with the different variations in the optical axes, under the action of the prisms, that amount of tension which it has been accustomed to associate with a given degree of convergence; so that when this latter is changed, even in a trifling degree, a corresponding change takes place in the tension of the ciliary muscle, altering at once the amount and character of the relative accommodation.

In conclusion, it would appear to have been satisfactorily proved that in emmetropia, with parallel axes, when there is at least action of the ciliary muscle, there is also the minimum amount of tension on the interni; (2) That for every increased tension on the ciliary muscle, there is a corresponding tension on the interni, and *vice versa*; and that this increase, as far as relative accommodation is concerned, is counterbalanced by an opposing muscular force in the recti externi, which maintains the direction of the visual axes.

From this it would appear to follow that the old idea that a definite convergence is attended with a definite amount of accommodation, is, *physiologically* speaking, the more correct one, since relative accommodation is only the result of an artificial stimulus to which the natural eye is never subjected. And farther, it is not, as has been asserted, the expression of the force of the ciliary muscle, but of a set of muscles, consisting of the ciliary, recti interni and externi muscles, and perhaps others of the extra ocular group.

The above applies, of course, only to normal emmetropic eyes.

It remains to be added, in this connection, that the belief, which has existed for some time, that the ciliary muscles of a pair of normal eyes cannot act independently of each other, has been rather strengthened than refuted by more modern observers (Graefe,<sup>1</sup> Donders,<sup>2</sup> Hering<sup>3</sup>).

Their experiments go to prove that the accommodation cannot be varied in one eye without being varied in the same degree in the other. This holds good, as well for the associated movements of the eye as for direct convergence of the visual axes; for the reason that the *sum* of nervous force expended by the interni during the associated movements, where one internus is elongated and the other forcibly contracted, is as great as it is where, in direct convergence, each muscle is equally contracted.

<sup>1</sup> Archiv, Ophth. B. 8, ab. II., 1862, p. 331.

<sup>2</sup> Zehender Klin. Monatsblät., June, 1866, p. 173.

<sup>3</sup> Die Lehre vom Binoc. Sehen, 1866, p. 136.

These principles, advanced by the earlier writers, have been lately discussed in their fullest detail by Prof. Hering, with what appears a claim for originality. We cannot, however, see any important distinction between saying, as has been done repeatedly, that the two ciliary muscles cannot act independently, and saying that the two eyes, as far as the ciliary muscle is concerned, must be looked upon as a "single eye." (Binoc Sehen, p. 136).

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ART. X.—*Venesection as one of the Means for the Arrest of Unavoidable Hemorrhage.* By C. C. F. GAY, M. D., Member of the Surgical Staff of the Buffalo General Hospital, Buffalo, N. Y.

NOTWITHSTANDING the laborious researches of the best medical thinkers of this and of the old world, it is claimed by many that no progress has been made during the last three decades in our knowledge of the means for averting fatal results from hemorrhage in placenta prævia. Although less has been accomplished than could be desired, the profession have a right to denounce as libellous this statement. Achievements in this department of our science, for obvious reasons, have been tardy of accomplishment, since it falls within the province of few medical men in general practice to treat more than a case or two of central implantation during their entire professional career. Many may have passed a lifetime without seeing a case, hence it is to those more favoured brethren who occupy public positions, that the general practitioner must look for light obtained from their more extended field of clinical observations. An observer, however limited may have been his opportunities, cannot be excused for withholding from the profession any theory, fact, or experience, of which he may be cognizant, however insignificant his own personal observations may appear to himself.

Pervaded by a sense of duty to others, and a desire to contribute something to our present knowledge, I assume the task of giving to the medical public the results of my own personal observations, based upon the management of five cases of unavoidable hemorrhage, four of which I saw in consultation, and one occurred in my own private practice. Three of them were cases of placenta prævia centralis, and two cases of placenta lateralis.

As an illustration of the tardiness of men to accept newly-discovered truths, to indorse medical innovations, and of the slow and deliberate strides by which the science of medicine has made its way to public esteem, I may state that it was not until the latter part of the seventeenth century the discovery was made that the placenta, in placental presentations, was

originally implanted by nature over the os uteri internum, and had not gravitated by its own weight to this position, as was believed by all observers up to this time. The idea that the placenta, in placental presentations, was opposed by nature to the os or near it, was first given to the world by Portal, and it was not until after more than four generations that Portal's idea was accepted as true. If it required a century for the profession to accept Portal's idea, may we not be hopeful and await with patience for the coming of that auspicious time when, by the united labours of the best minds in the profession, such advances shall be made in the science and art of midwifery that the parturient can be as confidently assured of safety during the perils of childbirth when the placenta presents as when the vertex does.

At this present time, if there be any one question relating to the management of the parturient more unsettled than another, it is that of the best course to be adopted in case of unavoidable hemorrhage. It is of the utmost importance, therefore, that some rule should be laid down to guide the practitioner in his hour of trial. It is a rule, and it should become an established law, never to penetrate by manual force the os, until it is dilatable or *completely dilated*. It ought also to be clearly understood that the os, in one case, when open to the diameter of an inch, is as completely dilated as another whose diameter should measure twice as much.

Sir James Y. Simpson, whose valuable labours and contributions to obstetrical science entitle him to the first position among his *confrères* as the best worker and thinker of his time, has attempted to demonstrate that the flooding proceeds from the placenta and not from the uterus. In this attempt he has, however, I think, signally failed; but acting upon the assumption that his theory was true, he proceeds to the very trying expedient of first removing the placenta. To accomplish this the law enunciated above is violated, because an early removal of the placenta for the arrest of uterine hemorrhage presupposes the forcible entrance of the hand to accomplish this object through a rigid os into and within the uterine cavity.

The theory upon which Sir James bases his rule of action being incorrect, his plan of procedure ought not to meet the approval of the profession. The most severe flooding I have ever witnessed occurred after the removal of the placenta, showing clearly the uterus to be the immediate source of hemorrhage, and not the placenta, as claimed by Dr. Simpson.

Dr. Robert Barnes, of London, believed he had cut the Gordian knot when he enunciated his new physiology of placenta prævia. He, having regard to the great necessity of observance of the law, never to force a rigid os, proposes to introduce, not the whole hand, but simply a finger, through the os while yet rigid, separating, so far as he could reach, the placenta from its placental attachments and zone of dangerous implanta-

tion, and thus convert an abnormal and dangerous labour into a natural and safe one. I have had experience in one case only wherein the plan recommended by Dr. Barnes was tried. This case is reported in detail in the *Buffalo Medical and Surgical Journal* for July, 1868. I proceeded after the plan proposed by Dr. B., to separate with my finger the placenta, which was centrally implanted from its attachments, as far up as I could reach, through an os sufficiently dilated to allow easy ingress of the fore finger. No less hemorrhage followed this manipulation, but I think there was more than before, though not a sufficient amount to make one at all anxious. After having waited for some time, the tampon which had been used was removed, and Dr. Hanenstien, who called me in consultation, introduced his hand, using some force, turned and delivered the woman of a stillborn child. This was followed by post-partum hemorrhage, of which the patient died in one hour and a half. Ergot was given immediately after the expulsion of the placenta.

The several plans suggested and advocated by Drs. Simpson and Barnes offer undoubtedly advantages in exceptional cases, but as a rule, we are constrained to believe that they cannot be accepted as the rule of practice; therefore, I again repeat, we must look elsewhere for agencies other than those of Drs. Simpson and Barnes before we can say that no more need be or can be said *pro* or *con*.

In an elaborate paper read before the Medical Society of the State of New York, by Dr. Isaac E. Taylor, and published in the transactions for 1865, are contained some most sensible remarks upon the treatment of placenta prævia, which should be treasured up by every medical man, on account of their intrinsic value; but I fail to see wherein Dr. T. has succeeded in demonstrating the unfolding of the cervix uteri as clearly as he claims. Dr. Taylor is undoubtedly correct in his observations that the cervix does not become obliterated until up to the full period of utero-gestation, or until the actual commencement of labour. This statement, however true, does not conflict in the least, as I understand the case, with the views of Dr. Barnes. Nowhere in his book, if I make one exception, can Dr. B. be understood as expressing any other opinion in regard to the relative position of the placenta and cervix than that it is opposed to the os internum and not to the os externum, as Dr. T. assumes. Dr. Taylor has, I think, misapprehended Dr. Barnes in this regard.

It appears to me, after a careful review of the different methods proposed by more recent writers for the control of unavoidable hemorrhage, that we are, after all, obliged to fall back, measurably, upon the teachings of the older authors, and to adopt their teachings with several modifications, to which attention will be presently called. It abates not one iota from the great merit of Sir James Y. Simpson, though his method may have been tried and found wanting; the genius evinced in its conception,

and the boldness manifested by the author in being the first to put it into execution, command the admiration of the profession.

The impression almost universally prevails, which leads to the great error in the proper management of unavoidable hemorrhage, that means must at once, without a moment's delay, be resorted to for the delivery of the parturient, without regard to the condition of the os uteri, hemorrhage alone affording a sufficient pretext for action and immediate interference. The lesson has seemingly many times to be learned, viz., to place more confidence in the actual powers and provisions of nature, and less reliance upon art. But to make confidence and trust available requires attributes in antagonism to those possessed by the timid. In times of emergency the man exhibits less calmness and temerity by precipitate haste than by withholding active interference until the opportune moment arrives.

In proposing to employ venesection as a remedy for the arrest of hemorrhage, the writer is well aware that he offers nothing new; but, nevertheless, by reason of the obloquy and oblivion to which venesection has long been consigned, it may be considered a proposition somewhat startling. Physicians are all agreed that venesection in disease has justly fallen into disrepute, because of the change of type of disease from the sthenic to the asthenic. We now give stimulants where we formerly bled, and it has become bad practice to deplete in pneumonitis; but, though *disease* is a condition of asthenia and debility, I do not understand that *health* is not as sthenic and robust now as in the times of Louis. The condition of the parturient is not one of disease, but the simple performance of a physiological function; hence, if venesection were ever applicable as a derivative in uterine or any other hemorrhage, it is of equal adaptability and service now, and cannot be ruled out upon any such hypothesis as that mentioned above.

Venesection was once regarded as the sheet anchor of hope by many within the circle of my own professional acquaintance for epistaxis, hæmatemesis, hæmoptysis, etc. So radically changed now are the views of the best authors in this regard, that scarcely a person could be found sufficiently bold to employ bloodletting as a derivative, lest he might be ostracized for his daring.

It is my purpose to do what I can to rescue this powerful agent from unmerited neglect; to show wherein it may be made available in certain cases of unavoidable hemorrhage and to recommend its employment; for if the methods recommended by Simpson and Barnes be inoperative, as I think it demonstrable that they are, then it must be confessed that we are not in possession of adequate means, in all cases, for the arrest of uterine hemorrhage.

If we must make public this confession of professional weakness, then no amount of popular prejudice should consign an agent to utter neglect which gives any promise of usefulness where the emergency was great and



the remedies few. Unfortunately for my advocacy of venesection, I am able to bring forward only a single case in which it was employed, and this cannot be considered a test case, inasmuch as it was one of placenta prævia lateralis and not of central implantation, the danger, as every one knows, being much more imminent in the latter than the former.

CASE I.—In March, 1852, I was called to a case of labour which proved to be one of lateral presentation of the placenta. The patient was robust and plethoric, aged 27, mother of two children; former labours normal and easy; I found this woman sitting nearly in the upright position in a high seat, prepared for the purpose; she claimed it as her right to maintain this position; her pains were regular, but not vigorous; she had lost considerable blood during her pains, which commenced two hours previous to my visit. On examination, found os pretty well dilated and placenta presenting left laterally; gave ergot, and waited until I ascertained that at each pain the blood spirted freely from the uterus. This case of labour occurred at a time when bloodletting was used almost indiscriminately for numberless ailments. I decided to bleed at once, and abstracted from the arm *pleno rivo*, about eight ounces of blood, which to my surprise and gratification effectually and at once arrested the flooding, the pains immediately became active, and as the vertex presented normally, labour was soon completed by the efforts of nature, without any more loss of blood, the patient convalescing as rapidly as in her previous labours.

There never occurred any doubt in my own mind that, in this instance, the fearful flooding was controlled and arrested by venesection. Its rationale it is not my purpose now to discuss. I content myself in giving the facts.

Although not strictly within the scope of this paper to give cases in detail, I nevertheless can more clearly illustrate my views upon the applicability of venesection in cases of placenta prævia, by briefly reporting two cases of placenta centralis occurring in the practice of Dr. Hauenstien, of this city, by whom I was called in consultation, and with whom I was associated from beginning to the ending of the labour.

CASE II.—February 23d, 1868, was called in consultation with Dr. H. to visit Mrs. R., German, aged 38, multipara. One month prior to this visit the patient had been attacked with uterine hemorrhage, which Dr. H. arrested by the tampon. At our joint visit, this woman had attained to her full period of utero-gestation, and was flowing; labour pains slight. At next visit, 5 A. M., ascertained that considerable blood had been lost, and that there was no perceptible dilatation of the os. Introduced the air-ball tampon, and bandaged the abdomen tightly. We determined to delay active interference, provided our efforts to arrest hemorrhage with the air-ball should be crowned with success, until the complete dilatation of the os. As the air-ball appeared to be efficient for the arrest of hemorrhage, we did delay, and await the efforts of nature, even beyond the verge of apparent safety, until dilatation was completed. We had ascertained from external palpation that the position of the child was transverse, and by digital examination that the placenta was centrally implanted. Pains had been considerable in force at noon, but now, at 9 o'clock P. M.

have ceased ; tampon now removed, os found fully dilated ; entrance of the hand within the uterine cavity easily made, the patient having been previously anesthetized, one foot seized, brought down, and when the breech became engaged, hemorrhage, which had been considerable after removal of tampon, was arrested, and the further delivery, as the pains had become active, was left to the unaided efforts of nature ; she gave birth to a living child, and had herself a good recovery. I should add, that pressure was constantly made with both hands upon the abdomen and maintained for some time after delivery. The air-ball, it is believed, applied closely up against the os, greatly facilitates dilatation.

CASE III.—April 4th, 1868, was requested by her medical attendant, Dr. Hanenstien, to visit Mrs. L., aged 40, mother of three children, youngest, nine years of age ; hemorrhage first occurred either at 8 or 8½ months utero-gestation. At 9 P. M., April 3d, copious hemorrhage commenced. At 2 o'clock A. M., April 4th, labour pains began. The air-ball was promptly used, there being no dilatation, and the abdomen bandaged. I first visited the patient with Dr. H. at 1 P. M., at which time there was some hemorrhage in spite of the tampon ; pains regular ; pulse feeble, normal in frequency. Examination had previously been made and central implantation diagnosed ; dilatation was sufficient to easily admit the forefinger. Advised continuance of treatment ; 5 P. M., patient much in the same condition ; advised waiting ; 8½ P. M., no material change ; general condition of patient the same as at last visit ; labour progressing ; removed tampon ; dilatation of os about one-half completed ; introduced air-ball again ; applied bandage and left the patient, but was summoned in haste at 3½ A. M., April 5th. There had been some hemorrhage in spite of the tampon during the last hour. The position of the child was ascertained to be transverse, as in the former case. Removed air-ball and found the os dilatable ; patient under the influence of chloroform ; entrance of the hand was easily made through the os ; within the uterine cavity, the child was turned, and delivered alive by Dr. H., with such assistance as I was able to render. At 11 A. M., April 5, no untoward symptoms, both mother and child doing well.

In the second reported case, it will be seen at a glance that the air-ball was all-sufficient to arrest hemorrhage, until the law of appropriate management, enunciated above, was complied with, viz. : non-interference, save the necessary means for the arrest of hemorrhage, until the *complete* dilatation of the os, hence venesection would not be thought of for one moment ; but, in the third case, more or less blood escaped around the air-ball, and the os was a longer time dilating ; it was rigid and undilatable. The cervix was undergoing the process of unfolding and obliteration, described by Dr. Taylor. Now, were it possible for general blood-letting to accomplish the twofold object of facilitating this process of expansion or dilatation, and of arresting hemorrhage, then the accumulative prejudice of twenty years against the employment of venesection should deter no one from its prompt, but cautious use, before there were any giving way or flagging of the vital powers.

I cannot assert positively, although I do believe, that in the last case,

venesection would have been borne, and that it would have greatly facilitated labour by more speedily dilating the os, preventing a protracted drizzling hemorrhage, and, to speak paradoxically, saving blood by losing blood. But I am prepared to go a step further, and claim more for venesection than its power to expand and unfold the cervix. I claim that it will, beyond a doubt, at least, in a majority of cases, arrest uterine hemorrhage. If it will do this in five cases out of ten, the woman is certainly entitled to its benefits.

One other thought should not be omitted here. There are those who will carp at the idea of the employment of venesection, and especially at the idea that it will produce any more influence in dilating the os than that of the blood already escaping locally from the uterus. I have never seen any evidence that this local flowing in the least facilitates expansion, while, on the other hand, are we not surrounded by a "cloud of witnesses," to testify to the power of venesection in overcoming a rigid os.

Barnes' dilators, in the hands of an expert, may work wonders by accomplishing the desired end; but I must acknowledge my skepticism in their utility, as well as applicability in the hands of the non-expert.

Dr. Elliot, of New York, however, has used and speaks well of them, and what he says should be received as reliable. No better authority need be sought for.

Finally, if every case of labour, so dangerous to both mother and child, terminated as happily as did these two reported cases, then there were no further need of expedients, but no assurance can be given that such termination can invariably be looked for. The air-ball was sufficient to completely arrest the flooding in one case, but not in the other. It is precisely at this critical juncture when the tampon seemed to be somewhat inefficient, so much so, at least, as to allow a greater escape of blood than in the one reported, that I would make venesection available. I have no difficulty in believing that the arrest of blood might be made complete by the abstraction of eight ounces of blood from the arm, provided always the patient had not lost already such an amount of blood as to have produced syncope, and I am clearly of the opinion that the physician would be justified in so acting, even though he did not accomplish the arrest of flooding with the lancet, for the chances in his favour for success against failure might be in the ratio of ten to one, and this certainly should be sufficient justification. Nor are we wanting in support of the sanction of the highest authority for our advocacy of bloodletting in unavoidable hemorrhage, authority which alone can be amenable to objection on the ground that it is not sufficiently modern; but, let me ask, were the older authors not our equals? Shall we cease to esteem their teachings? Are we so much more skilled, learned, and wise in our day and generation than they, that we must needs bury in oblivion the accumulated experience of the ages preceeding us? Let us not be forgetful of the fact that the

woman in labour is not sick ; that she labours not under disease, asthenic in type ; that we are called to render assistance in the performance of a physiological act, or, if you please, to treat an accident ; that, if hemorrhage may be controlled, the membranes ruptured, and the vertex presents or the breech presents, the labour ceases to be one of danger, and becomes one of safety, both to mother and child. And let us also remember that she who confides in our skill, and places her life in our hands, has a right to demand the application of all the known and tried means which may promise the least hope for her safety and the happiness of her family.

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ART. XI.—*Case of Amputation at the Hip-joint for Gunshot Fracture of the Head and Neck of the Femur.* By JOHN ASHHURST, JR., M. D., Surgeon to the Episcopal Hospital, etc. (With an illustration.)

AMPUTATION at the hip-joint is in itself an operation which involves such serious consequences, that it is the surgeon's duty to report every case in which it is performed, no matter what the result of the case may have been.

E. B., an Irish woman, twenty-two years of age, on an afternoon in the month of August, 1867, was shot by her husband's brother, while she was standing with her child in her arms on the door-step of her own house. Seeing her assailant coming towards her with a loaded gun, and announcing his intention to kill both her and her child, and not being able to escape, she crouched in a stooping posture, so as to shield her infant, and received the contents of the gun in her right hip. The ball, which was of the ordinary conical shape, entered behind, near the fold of the buttock, and shattering the head and neck of the femur and the acetabulum, passed out at the groin, and grazed the leg of the child ; inflicting on the latter, however, a mere flesh wound, which soon healed.

The affair took place at or near Tacony, in this State, and the poor woman being carried into the house suffering from shock and loss of blood, was soon after seen by Dr. W. Scott Hendrie, under whose skilful care she remained until her admission to the Episcopal Hospital in the following December.

When she came under my care on January 1st of the present year (1868), her face, though still comely, bore evidence of the prolonged suffering to which she had been subjected. Her right lower extremity lay perfectly helpless and immovable, and was the constant seat of severe pain, which was greatly aggravated by pressure or by motion. One or two abscesses had formed in the neighbourhood of the fracture, and the openings from these, as well as the original wounds, gave vent daily to a very large amount of pus. She had, besides, a large and painful bed-sore over the sacrum, and was, in addition, constantly subject to the recurrence of an exhausting diarrhœa.

Careful examination revealed the existence of such an extent of osseous lesion as nature could not be expected to cope with, and after repeated consultations with my colleagues, it was unanimously determined to re-

commend disarticulation, as offering the only chance of recovery. Her debility at this time may be estimated from the fact that her pulse-rate was constantly about 150.

The risks of the proposed operation were fully explained to herself and to her husband, and after mature deliberation she resolved to take the chance of life which amputation offered; and having received the last consolations of her religious faith, placed herself entirely in our hands. She was brought completely under the influence of ether at noon of January 14, and the abdominal aorta being controlled with the large aortic tourniquet (which Mr. Gemrig, of Eighth Street, kindly lent for the occasion), I removed the limb by cutting, with a short knife, anterior and posterior flaps from without inwards. There was very little hemorrhage, no blood whatever being lost from the general circulation; and when the operation was completed no one saw any reason why the result should not be in every respect favourable. Although her pulse had flagged very much during the amputation, she came up well from the state of anæsthesia, and reacted quite as fully as we had any reason to expect. In about two hours and a half she was removed to her bed, and expressed herself as relieved at the operation being over. Shortly afterwards the stump was dressed, but not long subsequently she began, without any apparent reason, to sink, and died at the last rather suddenly. She lived three hours and a quarter after the operation.

The accompanying illustration shows the appearance of the injured thigh-bone, now in the hospital museum, the head and neck having been entirely destroyed.

In the *Edinburgh Medical Journal* for March, 1868, will be found an almost exactly parallel case to the above, the operator having been Prof. Fayrer, of Calcutta. The patient had received a gunshot fracture of the head and neck of the left femur and of the ischium, and disarticulation, with double flaps by transfixion, was performed on the thirteenth day. Death followed in three hours from shock, and a post-mortem examination showed heart-clots and incipient pyæmic patches in the lungs.

Secondary, or, as it was well termed by the older surgeons, *insidious* shock, is a fruitful source of mortality after grave operations, which has not been got rid of by the introduction of the use of anæsthetics. I believe, if my patient had not been so exhausted before the amputation, she might have been able to live through this secondary shock, and then there would have been every prospect of her recovery.

Every step of the operation had been carefully planned beforehand, and, thanks to the able assistance of my colleagues and of the resident hospital staff, there was not the slightest misadventure from beginning to end. There was very little hemorrhage, less even than in ordinary amputations; and, in fact, I do not know that I have ever performed



any operation where everything went off more smoothly and satisfactorily (so far as the operation was concerned) than in this. The case may serve, if for nothing else, for an additional proof of a fact which we are sometimes tempted to lose sight of, to wit, the excessive gravity of hip-joint amputation under any circumstances.

It may seem out of place to comment upon the mode of operating *à propos* to an unsuccessful case. With regard, however, to the use of the aortic tourniquet, I may say, that while I should be loath to amputate at the hip without it, I cannot but think the pressure it must exert upon important nervous structures in the abdomen to be the reverse of beneficial; and hence I would strongly urge that its application should not be continued longer than absolutely needful.

2000 WEST DE LANCEY PLACE, Aug. 1868.

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ART. XII.—*Adventitious Fibroid Sac in Abdomen; Dropsy; Paracentesis; Twelve Hundred and Seventy-five Pounds of Fluid drawn off in thirty-one Operations; Death; Post Mortem.* By E. M. JOSLIN, M. D., of Upper Alton, Ill.

AUGUST 29th, 1864, I was requested to visit Miss L. M. F., a highly intellectual, refined, and cultivated lady, for the purpose of performing paracentesis abdominis. She was then about 30 years of age, and from herself and family I derived the following history. She had been engaged in intellectual pursuits, and enjoyed good health until the summer of 1860, when she was attacked with dysentery, which proved severe and protracted, followed soon after by typhoid fever, from which she suffered for several weeks. Since these attacks she had never been as well as before, and soon began to suffer with pains in the right side, a sense of debility, dyspeptic symptoms, swelling of the abdomen, dyspnoea, etc. These symptoms increased until she was bedridden. Frequently, during the years 1861 and 1862, she had, as she describes, a severe inflammation in her side, followed by what she was told, and believed to be, the breaking of an abscess of the liver, succeeded by vomiting and purging of a dark and offensive sanious matter, after which she obtained partial relief. Yet her abdomen continued to enlarge, and her urine became more and more scanty, until she scarcely voided two ounces in twenty-four hours. She believed she had dropsy, but her physician assured her she had not. In the summer of 1863 she resolved to try the hydropathic treatment, and was taken to a so-called "*Cure*" at Cleveland, O. Here her case was diagnosed to be ascites, and after several months' treatment by electrical baths and the full formula of water treatment, her sufferings from the enormous weight and pressure of the fluids had become so great that an operation was decided upon. Accordingly, on the 20th September, 1863,

Dr. Seeley, the principal of the "Cure," performed paracentesis, and drew off 72 pounds of water. From this time her general health improved, so that in a few weeks she returned to her home, and again placed herself under the care of her family physician.

Notwithstanding the general improvement in her health and strength, and despite the most vigorous treatment, she found herself rapidly filling again, so that on January 8th, 1864, the second operation was resorted to and 46 pounds removed. Again she recuperated, so as to enjoy a few weeks of comparative comfort, but without any impression being made upon the secretion of fluid. On April 2d, the third operation became necessary, and 47 pounds were drawn off. The relief afforded being transient, and the secretion constantly going on, the fourth tapping was performed on June 18th, when  $42\frac{1}{2}$  pounds were obtained. About this time her attending physician died, and on August 29th, I was requested to take charge of the case.

I observed my patient to possess a slender form, about 5 feet 2 inches in height, with a marked scrofulous diathesis, fine nervous temperament, and a mind buoyant and cheerful. She was suffering greatly from dyspnoea, and I at once tapped her and drew off 36 pounds of fluid. As there was great prostration and irritability of the stomach which prevented her taking any nourishment except liquids, and these only by the teaspoonful, I directed my treatment entirely to the correction of these attendant symptoms. She gradually improved, so that in a few weeks she was able, except for about one week after each tapping, to take her accustomed place at table, and, during the interval between the operations, to ride and make visits among her friends. The secretion of fluid, however, steadily continued, and as there was little change in the progress of the case until January last, I have embraced in the following table the number and date of each operation, and the amount of fluid drawn, up to the time of her decease, which took place May 4th, 1867.

*Table of Operations.*

No. of operation.	Date.	Weight of fluid.	No. of operations.	Date.	Weight of fluid.
1st,	September 20th, 1863,	72 lbs.	18th,	April 30th, 1866,	47 lbs.
2d,	January 8th, 1864,	46 "	19th,	May 25th, "	43 "
3d,	April 2d, "	47 "	20th,	June 25th, "	46 "
4th,	June 18th, "	$42\frac{1}{2}$ "	21st,	July 30th, "	45 "
5th,	August 20th, "	36 "	22d,	August 30th, "	48 "
6th,	November 27th, "	46 "	23d,	September 20th, "	48 "
7th,	February 9th, 1865,	45 "	24th,	October 24th, "	46 "
8th,	April 19th, "	32 "	25th,	November 30th, "	47 "
9th,	June 7th, "	45 "	26th,	December 29th, "	59 "
10th,	July 31st, "	41 "	27th,	January 23d, 1867,	18 "
11th,	September 7th, "	41 "	28th,	February 16th, "	37 "
12th,	October 17th, "	43 "	29th,	March 16th, "	34 "
13th,	November 22d, "	42 "	30th,	April 7th, "	16 "
14th,	December 27th, "	44 "	31st,	April 13th, "	10 "
15th,	January 31st, 1866,	40 "	Post-mortem,	May 5th, "	12 "
16th,	March 3d, "	44 "			
17th,	April 2d, "	43 "			
			Total	.	1286 $\frac{1}{2}$ "

The general appearance of the fluid up to January 23, 1867, was that of a pale, semi-transparent serum, with a slightly yellowish tinge, inodorous, tasteless, and partially coagulable by heat and acids. At this time she had suffered for several days with severe pain and soreness in the right iliac region, also in the region of the stomach, attended with retching and vomiting of a dark, sanious, and offensive matter, distressing dyspnœa, and prostration. At the tapping, on the 23d, the fluid ran clear as usual until about 10 pounds were drawn, when well-formed pus presented. When 6 or 8 pounds had been drawn I was obliged to desist and close the orifice, owing to the extreme prostration, which threatened immediate dissolution.

By the free use of stimulants she gradually revived, and in six hours passed by stool about one gallon of a dark, offensive, puriform matter, which relieved all her most pressing symptoms. From this time, however, until her death, nausea and irritability of the stomach remained a prominent feature in her case. During the whole four months her daily ration of food did not exceed, on an average, an ounce of bread and a teacupful of milk, with occasionally a few teaspoonfuls of tea, and for four weeks previous to death, she subsisted entirely upon milk and tea, administered by the teaspoonful every three to four hours. The secretion of fluid, as will be seen by the table, went on as usual, until death, which occurred from inanition. The effusion was confined to the abdominal cavity. Her urine, healthy in character, had been very scanty during her entire sickness, except for 24 to 28 hours after each operation, when it was more copious. No œdema; secretion from the skin usually normal. For the last two years she had menstruated regularly, although this function was suspended for near three years previously. Her family have a marked scrofulous diathesis, and an elder sister died a few years since of cancer of the breast.

*Autopsy eighteen hours after death.*—Features sunken, great emaciation; brain and spinal cord not examined. Lungs anæmic but healthy; heart somewhat smaller than natural, otherwise healthy; no valvular disease; both organs very closely impacted, and occupying but a small portion of their original space. The arch of the aorta was conspicuous in the triangular space above the left clavicle; scarcely any serum in the chest cavity. The base of the thorax greatly expanded. The liver healthy, except a slight hypertrophy of the right lobe. The gall-bladder contained about two fluidounces of healthy bile. The diaphragm was distended from pressure below, so as to reduce the cavity of the chest to not more than one third its normal capacity. The liver was pushed up behind the right breast, with its superior portion nearly on a line with the right axilla. The stomach and entire mass of the intestines (except the rectum), together with the floating portion of the peritoneum, were closely impacted under the arch of the diaphragm, and entirely above the free margin of the ribs. They presented as a blackened, disorganized mass, with evidence of adhesions throughout, but so easily broken down that it was impossible to



make a minute inspection of them; pancreas a dark, disorganized, pulpy mass. The stomach, intestines, pancreas, and epiploon might have been contained in a quart measure. The whole cavity of the abdomen was occupied by a fibroid sac, varying from an  $\frac{1}{8}$  to a  $\frac{1}{4}$  of an inch in thickness, very firm, and resembling in texture the raw hide of a beef. Capacity of sac from five to six gallons. It was adherent to the peritoneal lining of the cavity, but easily separated by the finger over its whole extent. The cyst seemed to be an entirely adventitious growth, and contained about twelve pounds of fluid. Here and there in its texture were patches of ossification, in some instances embracing its entire thickness. One of these ossified portions measured about six inches in length, by about one inch in width. Upon its inner surface it was studded with tubercles from the size of a kernel of wheat to that of a pigeon's egg, and on the fundus, one superior portion had attained the size of a goose egg, and was in a state of cancerous ulceration. Here and there between the tubercles, were also numerous patches of small, conglomerate cysts, growing like the hydatid, and filled with a semi-transparent fluid. Upon that portion over the left ovary was a patch about four by six inches, presenting a highly malignant character, from which a dark, sanious matter was being thrown out. The outer surface of the sac presented a smooth, fibrous appearance, and the textures adjacent were healthy. Kidneys very small and shrivelled, otherwise healthy. Left ovary healthy; the right somewhat softened and patulous. Uterus healthy. Bladder abnormally small and shrunken. Had not the means of making any microscopic examinations.

The above case presents several points of interest, but we will not occupy space by their discussion. The weight of fluid drawn was more than twice the weight of her entire food and drink.

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ART. XIII.—*Tobacco as an Hypnotic in a Case of Chronic Wakefulness.*

By E. A. HERVEY, M.D., of Rossville, Staten Island, N. Y.

SOME years since I was consulted by my brother, who had long been troubled with what appeared to be pleurodynia, attended with dull pain, somewhat increased at night. As opiates disagreed with him, always producing nausea and vomiting, or else restlessness and delirium, it was necessary to resort to some narcotic that would not give rise to such unpleasant consequences. After various unsuccessful experiments, I determined to try tobacco, and advised him to smoke a cigar or pipe of Turkish, or other mild tobacco, previous to retiring at night. As he had never been in the habit of using tobacco in any form, and having, moreover, a great aversion to its use, the effect of a few puffs was very marked, inducing a sweet and dreamless sleep. It is important to add that, in addition to pleurodynia, my brother had for many years been affected with what is termed *insomnia*. Being a very active and enthusiastic student and thinker,

he not unfrequently found it impossible to dismiss his studies at night, and to obtain the much needed sleep, although he attended carefully to exercise and diet, and retired punctually at ten o'clock. More than once he had passed from four to six days and nights without any sleep whatever. Now my brother was so happy as to discover that the smoking of tobacco at bedtime not only relieved the pain of which he complained, but, what was still better, secured to him regular and refreshing sleep.

The powers of tobacco as a sedative narcotic, in cases of chronic vigilance, deserve to be better known and appreciated. The habit of tobacco smoking as one of "the small vices" of our time is undoubtedly injurious both to body and mind. Smoked in the morning, after a night of sufficient sleep, tobacco produces in most cases excitement and inquietude; when smoked in the evening it generally produces lassitude and repose. This rule is, of course, based on the supposition that the smoking is moderate, and the smoker in tolerable health.

I would respectfully suggest the query, whether resident physicians in our asylums for the insane are right in denying the use of tobacco in every form to *all* their patients. As insomnia is a premonitory symptom, and frequently attendant on some kinds of insanity, it is, if I am not mistaken, a question worthy of thorough discussion.

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ART. XIV.—*Undescended and Hypertrophied Testicle, with Congenital and Multilocular Hydrocele.* By J. C. HUBBARD, M. D., Ashtabula, O.

J. P. Z., aged 30 years, consulted me November, 1866, in regard to a tumour in his right groin. Says that, from infancy, his right testicle has been situated in the groin, just under the skin, and was much smaller than the opposite one. About two years since, in consequence of a severe blow, it became painful and enlarged. During the two months just passed the increasing pain and tenderness have incapacitated him from all business. On examination, an oval-shaped tumour, six and a half inches long, and five inches wide at its broadest part, presented itself just above the right groin, occupying the original canal; its lower border slightly overlapped Poupart's ligament. The inner and outer extremities were elastic and fluctuating; central portion hard, feeling like an enlarged and indurated testicle. It could be distinctly grasped, slightly elevated, and moved a little in all directions. On the 17th the gland was extirpated. The outer extremity of the tumour proved to be a multilocular hydrocele, and contained two ounces of serum. The septum of the sac was formed by adhesion of the vaginal tunic of the scrotum to the central surfaces of the testicle. At the inner extremity of the swelling a second sac was opened; it communicated with the peritoneal cavity and discharged thirty-two ounces of serous fluid. The testicle had served as a valve to the internal ring so effectually that no impulse was perceptible to the touch when the patient

coughed. The pillars of the ring and the inter-columnar fascia were so widely separated and attenuated as not to be noticeable. On my first examination the vas deferens was observed passing down half way to the bottom of the scrotum, forming a loop. The spermatic cord was very short—six or seven lines in diameter, and an inch and three-fourths long; firmly attached centrally to the posterior border of the testicle as if it penetrated it, rather than being a continuation of the epididymis. It had a fibro-muscular appearance, and was inelastic. To a superficial examination, the epididymis presented none of its normal characteristics, except on its relative position to the gland. The vas deferens could not be traced to it, the testicle or the cord. Six small arteries were divided with the cord and required ligatures. After a very severe peritonitis, the patient made a complete recovery.

In addition to the many alleged causes for retention of the testis, the facts in the foregoing case make it proper to add another, namely, shortness of the cremaster muscle, by which it seems to have been prevented from passing beyond the external ring. In all recorded cases of undescended and errant testes, observed by us, where excision was practised, they were either less than the normal size or enlarged by cancerous deposit. In the case under consideration, the hypertrophy was fibrous, and resulted from repeated attacks of inflammation. This case is remarkable for the shortness of the cord (an inch and three-fourths), for its inelasticity, and for its attachment, or rather its insertion into the centre of the posterior border of the testicle. The cord and its adjacent tissues were not indurated, nor did it have abnormal adhesions; and, when divided, exhibited very perceptible contractile powers. We have the observations of Chelius and other writers to support the statement that when the testes are retained in the inguinal passage, the cord is long, and lies coiled behind the gland, and that it affords no retentive action against spontaneous descent, or to the obsolete operation of incision and traction to produce the same result.

The case under consideration is evidently an exception to the facts as given by Chelius, and as mechanical impediments constitute the usual causes of non-descent of the testes, the shortness of the cord, its extraordinary and unyielding attachment to the centre of the spermatic gland, are suggested as the causes of its retention in the inguinal canal.

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ART. XV.—*Secondary Hemorrhage from Brachial Artery, treated by Compression and Per-sulphate of Iron.* By JNO. STAINBACK WILSON, M. D., Cypress (near Houston), Texas.

A VERY interesting case of primary hemorrhage of the popliteal artery, arrested by compression, reported in the *American Journal of the Medical*

*Sciences* for July, 1866, page 107, by Eli D. Sargent, M.D., U.S. Navy, reminds me of the following case, which came under my charge while on duty in Winder Hospital, Richmond, Va., during the late war :—

M. S., aged 25, was wounded in a skirmish, November 8, 1863. The ball entered the posterior and outer part of the forearm, two and a half inches below the elbow, passed upwards and inwards, fracturing the internal condyle of the humerus, and making its exit on the inner side of the arm, about the same distance above the elbow as the point of entrance below; thus passing over the course of the brachial artery.

At 11 o'clock on the morning of the 26th, he had a very profuse hemorrhage from the lower orifice of the wound, which was promptly arrested by the application of per-sulphate of iron, in powder, to the bleeding part, and by compression, as follows: A compress of lint was pushed gently into the wound, and then another was placed over this. Next, a long compress of firmly folded cloth was placed over the whole course of the brachial artery, which was held in place by a bandage pretty tightly applied from the ends of the fingers to the axilla. The whole limb was then elevated and irrigation used, by letting cold water drip from a suspended canteen. At 11 o'clock the following night, the hemorrhage recurred, but in moderate quantity; and the blood having coagulated sufficiently to check the hemorrhage before my arrival, the dressings were not disturbed, except so far as to tighten the bandage, which had become somewhat loose. The only additional treatment was a few half grain doses of morphia, with five drops of tinct. veratrum viride, every three hours. On the evening of the 28th, the veratrum, having produced a very decided effect on the pulse and stomach, was discontinued. After this there was no more hemorrhage, and the wound was healing kindly on the 13th of December, the date of last observation.

*Remarks.*—In treating the above case, I was aware that I was acting contrary to the dictum of Guthrie and other distinguished authorities. But I was induced to do this for the following reasons: 1st. The patient was young, stout, and in good condition, and therefore his life was not immediately endangered. 2d. My experience and observation had taught me that cutting open wounds and tying bleeding vessels are much easier said than done, and not to be attempted except when imperatively demanded. 3d. On my first visit the hemorrhage, though not entirely checked, had so far subsided, that I thought myself justifiable in being governed by the sound maxim—"Never operate, unless the artery, however large, is bleeding."

On my second visit, the hemorrhage having entirely ceased, no call for further interference then existed. In this case I have no doubt that the brachial artery was opened by a slough, and yet the hemorrhage was happily controlled by means which may be emphatically pronounced *tute, cito, et jucunde*.

ART. XVI.—*A Case of Poisoning by the Cyanide of Potassium.*

By A. B. ARNOLD, M. D., of Baltimore, Md.

THE symptoms of poisoning by the cyanide of potassium and prussic acid are said to be identical, but as these cases generally terminate very rapidly, little opportunity has been afforded to watch the course of the symptoms or to note the subjective sensations peculiar to the action of these poisonous agents. The following case, which happened in my own person, is therefore of some interest, since I well remember the manner I was affected when the poison first began to act, and also the agonizing struggle for life, which immediately preceded recovery. Various statements of the accident, which occurred some years ago, found their way into the daily press, but a full and reliable account of the case I had, for certain reasons, withheld from publishing till now.

I was sent for in the evening by Mr. G. Eckert, of this city, to attend his child, about two years old, for whom I prescribed a mixture containing two scruples of chlorate of potash. Early the next morning I was hastily summoned to see the child again, whom I found already dead on my arrival at the house. The nurse informed me that the child, on the previous evening, could not be induced to swallow any of the medicine which I had prescribed, but that about half an hour ago the child took a teaspoonful of it, which almost instantly caused convulsions and soon after death. While I was examining the corpse, noticing the white froth at the mouth, the very pallid countenance, and coolness of surface, the nurse suggested that the medicine might have killed the child, and that either myself or the apothecary had made a fatal mistake. At the same time she handed to me the phial containing nearly the whole of a two ounce mixture, which I repeatedly carried to my mouth, in order to determine by the taste of what it might be composed. I was still holding the phial in my hand when I began to feel a slight giddiness of the head and an inclination to yawn, to sigh, and to heave. Soon after I experienced some difficulty in using my lower jaw in the act of speaking. No further doubt remained now in my mind that I had tasted some deadly poison. I hurried to a drug store at the corner of the next street, which happened to be the same one where the medicine had been procured. On my way thither, which took me but a few minutes, all the symptoms I have mentioned increased, and when I reached the apothecary's my gait seemed to me to be unsteady. I called for a strong emetic and sat down on a chair. Mr. Löffler, the druggist, handed to me in a teacup a solution of tartar emetic and ipecac., which I had some difficulty to introduce into my mouth, and I distinctly recollect that I neither felt the usual taste of the drugs nor had any sensation of the act of swallowing. Mrs. Löffler, who was present at the time, told me

afterwards that I fell off the chair before I had finished drinking the emetic, that I turned blue in the face, and breathed slowly and heavily. It was about eight o'clock in the morning when I came to the drug store, and at two o'clock of the same afternoon I gave the first signs of returning consciousness. The medical attendant who first saw me told me that he found me lying on the floor in a deep stupor; a reddish froth covered my mouth and nose; my face looked livid and bloated; the pulse was hardly perceptible; respiration was heavy and laboured, and produced the blowing of bubbles at the mouth; urine and feces came away involuntarily. About two pints of blood were taken from my arm without any mitigation of the symptoms. I clearly recollect that some time before I had fully recovered from the effects of the poison, I struggled desperately for breath, and that the horrible conviction of impending suffocation, though ignorant of its cause, did not leave me for a single moment. About the same time I recognized the presence of my wife and brother, but the violence of the asthmatic symptoms prevented me from speaking to them. This dreadful smothering sensation seemed to me to have continued for a great length of time, though I learned afterwards that this stage lasted hardly thirty minutes. I also remember the effects of the pungent smell of carbonate of ammonia, which was held frequently to my nose, and I shall never forget the sensation of imminent suffocation which it produced. The efforts I made to prevent a repetition of it must have been wild and furious, for I recollect that my arms and legs were held tight by some of the bystanders while the ammonia was again applied. As soon as I felt the first disposition to vomit my consciousness was perfectly restored, and I have the indelible recollection of the anxiety I felt, lest the act of vomiting would smother me to death. The first ineffectual attempts at emesis did in fact increase the asthma. To my greatest joy, or rather surprise, the copious evacuation of the contents of my stomach, consisting of an undigested breakfast, was instantly followed by a complete cessation of all the symptoms. The relief was prompt and permanent. It is hardly to be presumed that the emetic I had taken five hours before caused the vomiting, and, besides, authors state that recovery is usually preceded by emesis.

The circumstance which led to the discovery of the kind of poison I had taken, and which cost the life of the druggist, is somewhat curious. It appears that when Mr. Eckert heard that I was lying at the point of death in Mr. Löffler's drug store, he came to see me, and brought the medicine with him which had proved fatal to his child. He accused Mr. Löffler of having poisoned the child, who in an excitable manner offered to swallow the contents of the phial, in order, as he said, to show that he made no mistake. Unfortunately he was permitted to drink nearly a table-spoonful of the mixture, and in a few minutes afterwards he fell down dead. The attending physicians examined now the prescription file of the pre-

vions day, and found one over my signature, which read : Potass. chlor.  $\mathfrak{D}\mathfrak{j}$ , syr. gum. acac. aqua anis.  $\mathfrak{a}\mathfrak{a}$   $\mathfrak{z}\mathfrak{j}$ .—M. S.—One teaspoonful every three hours. They next examined the contents of a glass jar which was labelled Potass. Chlorat., which was, however, empty, and the few grains of a dirty, whitish looking salt which they scraped from the bottom of the jar, bore no resemblance to the well-known crystals of the chlorate of potash. It was further discovered that another label was under the one which had P. C. written on it. This was brought to view after the top label had been detached by carefully wetting the paper, when the words Kali Cyanuret became distinctly legible. The whole mystery was subsequently fully explained by Mrs. Löffler, who stated that her husband had bought the drugs at second-hand from a German druggist, and was therefore not aware of the fact that the jar marked Potass. Chlor. had formerly contained the cyanide, some of which still stuck to the bottom of the jar; and that on the previous evening, when my prescription for chlorate of potassa came in, it required considerable scraping of the jar to make up the full amount of the drug.

It is impossible, under these circumstances, to determine the exact quantity of the cyanide which proved fatal to the child and the druggist, but its deadly effect in both these cases was fearfully rapid. In my own case I must evidently have taken considerably more than the highest medicinal dose, which is stated to be the five-sixths of a grain. Mr. Nunneley, who has reported a case similar to my own, in one of the English medical journals, conjectured that the immediate effects of poisonous doses of the cyanide of potassium act on the motory functions. This opinion seems to me to be correct, for my consciousness remained intact for some time after I had felt the stiffness of my lower jaw and difficulty in moving my lower limbs. It is, however, possible that the disturbance of the sensory functions may set in simultaneously with those of the motory, for the loss of taste of the emetic solution which I drank, I experienced but a few minutes after I had swallowed the poison. The violent form of asthma which preceded recovery in my case, and which has been uniformly observed in similar cases, is another symptom which lends weighty support to the opinion that the motor element of the respiratory function is originally affected by the poisonous action of prussic acid and its compounds—and if this be true, it may suggest a solution of the much-vexed question of the pathology of asthma. The temporary paralysis of the motor nerves, whether at their centric origin in the medulla oblongata, or along their distribution to the respiratory apparatus, from any cause whatever, would be sufficient to give rise to all the symptoms characteristic of true asthma. There can hardly be a doubt that the feeling of constriction about the chest, or the gasping for air, which has been witnessed in cases like my own, is but an abatement of the paralytic effects of the poison on the nerve-

centres, which supply the respiratory, and perhaps also the circulatory system, with adequate innervation.

[It may not be out of place to here call attention to the important observations of M. W. PREYER, noticed in our preceding number, p. 577, who asserts that the subcutaneous injection of sulphate of atropia, if made pretty quickly after the ingestion of prussic acid, is an *unfailing antidote*, provided a sufficient dose of the acid has not been taken to paralyze the heart.—EDITOR.]

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ART. XVII.—*The Hypophosphites in the Toothache of Pregnancy.*

By W. H. STERLING, M. D., of Burlington, N. J.

A LADY under my care, in her first pregnancy, suffered most severely from toothache and facial neuralgia consequent upon the rapid decay of her teeth, which had previous to this event been very good, been kept with scrupulous care, and had not for years required any attention from the dentist, until about the fourth month of pregnancy, when they began to decay with great rapidity, so that in the course of a month seven were sufficiently decayed to need filling, and the neuralgic pain attendant upon their condition was such as seriously to affect her health.

The ordinary remedies having been used with but merely momentary relief, it occurred to me as her organization was highly nervous, and nature, with wise provision, ever takes care to supply the fœtus with proper and ample nutrition, even at the expense of the mother—that perhaps the bone and nerve-forming elements in her system were not sufficient to meet the wants of both mother and child, and hence the failure to provide for the molecular changes in the teeth, the material being used for the bony structure of the rapidly growing fœtus. Acting upon this theory, I prescribed the hypophosphites of lime, soda, and potassa, together with the hypophosphite of manganese (having previously given iron) in two grain doses each, three times daily, in the form of the glycerole. The relief was immediate and permanent, the pain entirely removed, and the decay of her teeth was arrested, and her general health was very much improved with the renewal of her physical strength and mental vigour.

BERLINGTON, N. J., December 5, 1868.



## TRANSACTIONS OF SOCIETIES.

ART. XVIII.—*Proceedings of the Clinico-Pathological Society of Washington, D. C.*

1867. April 6. *Aneurism of Ascending Aorta; Death from Rupture.*  
—Dr. C. M. FORD read the following report:—

I was called at noon, April 3d, to see L. S., colored, æt. 51, weight 180 pounds, height five feet six inches, plethoric habit. I was informed by his wife that he had been brought home from his work about one hour before my visit, on account of having fallen suddenly to the ground, suffering from severe pain in the region of his heart, and with inability to move his lower extremities.

The symptoms, at my first visit, were pain in the stomach and bowels; pulse 60, feeble; tongue slightly coated; bowels constipated. He ate for his supper the night before three fried eggs, and the same number for breakfast the next morning (3d). As he stated that fried eggs always gave him colic, and as I could learn nothing at the moment of seeing him to draw attention to the state of the thoracic viscera, I believed him to be suffering from indigestion, and ordered him  $\mathfrak{ss}$  of castor oil with  $\mathfrak{ss}$  of turpentine; also, elix. chloroformi (Parrish),  $\mathfrak{ss}$  every half hour until relieved; large mustard plaster over abdomen.

At 4 P. M. I was summoned in great haste, but found him dead on my arrival. His wife stated that the oil and turpentine moved his bowels quite freely about 3 o'clock. She gave him five doses of the chloroform mixture without in any degree alleviating his sufferings. At 3½ o'clock he walked across the floor, complaining of a sense of tightness across the chest; then, falling back on the bed, immediately expired.

*Post-mortem twenty-four hours after death.*—*Rigor mortis* well marked. Nothing unusual or noteworthy observed in the abdominal contents. In the thorax, however, a more interesting condition was discovered. On removing the heart, and before opening it, there was found an extensive extravasation of blood into the outer tunic of the large vessels and in the neighbouring cellular tissue. The heart itself was of rather more than the normal size, the left ventricle larger and broader than the right; trachea and œsophagus normal in position and condition; ascending and transverse aorta lengthened by an inch at least—double its normal calibre, occupied by fusiform dilatation extending from aortic sinus for 2½ inches up the vessel. External tunic of transverse, and pericardial investment of ascending portions of the arch separated from the middle tunic for nearly the whole extent of the dilatation, infiltrated with blood, and torn in one or two places; several clots came out on washing specimen. On opening heart, walls and valves of right ventricle apparently healthy. Left ventricle, walls thickened, pale and fatty; mitral valve normal; aortic valves thickened; orifice small; very slight insufficiency; columnæ carneæ unusually large; internal surface of aorta spotted with

atheromatous deposits; at the largest of them the internal and middle tunics have given way, leaving an angular rupture nearly an inch in length.

*April 20. Latent Pneumonia.*—Dr. H. P. MIDDLETON read the following report:—

I was called, January 18th, 1867, to I. C., mulatto, æt. 30; found him suffering with diarrhœa, some pain through his chest, and great nervous excitement, manifested by extreme restlessness, picking at the bedclothes, &c.; learned that he had been taken sick about 36 hours before, and had been growing worse ever since. Diffused pain in chest; experienced a sense of suffocation whenever he attempted to lie upon his back; nothing abnormal was observed on percussion of chest, and on auscultation only a few moist rales over the left lung. Tongue heavily coated with a yellowish-white fur; stools six or eight a day; no pain in any part of the abdomen; pulse 116, soft and full; skin moist and clammy. I learned that he had been in the habit of taking five or six glasses of brandy each day, and that during the week past he had exceeded that quantity. Respirations about 26 per minute. I diagnosed the case to be one of incipient delirium tremens with diarrhœa. Ordered chalk mixture, and a scruple of bromide of potassium at 7 and 9 P. M.

19th. More composed; has not slept; diarrhœa continues—same treatment.

21st. Not so well; has not slept, and is more excited; diarrhœa has assumed a dysenteric character; pain in the chest now confined to the anterior portion of the left side; says it is the pain which prevents his sleeping; coughs a little, and expectorates quite freely a little mucus and saliva; has had no chill; nothing abnormal elicited by percussion; mucous and submucous rales over the greater portion of left lung, detected by auscultation; is unable to lie on either side. Ordered hydrarg. chlor. mit. gr. iv; ant. et potas. tart. gr. j.; pulv. Doveri ℥ij, to be divided in pulv. viij, one to be taken every 4 hours; scruple doses of potas. bromid., to be taken at 6, 8, and 10 P. M.

23d. Slept a little for the last two nights; dysenteric symptoms much improved; tongue cleaner.

24th. Slept none last night because of pain in the side; cough and expectoration the same. Ordered a blister 6x8 to the painful side.

27th. Dr. J. T. Young in consultation; patient very weak; pulse, which had fallen to 84, has risen to 120, and is very weak and compressible; respirations increased in frequency; tongue tremulous when protruded. Examination with Cammann's stethoscope reveals pneumonia in a state of resolution affecting a portion, and probably the whole of the lower lobe of the left lung. Ordered large warm poultices continuously to the side, and also 4 ounces of brandy and a pint of beef-tea daily.

28th and 29th. Patient has slept both nights, and is much improved; still complains of pain in the side. From this time he made a steady convalescence, and on February 9th walked out; discharged cured on the 23d.

Dr. Middleton called attention to the absence of definite symptoms of pneumonia, except the increased respiration and slight cough, and expectoration, also to the presence of nervous excitement, protracted wakefulness, and diarrhœa, which, with the man's history, had caused his first diagnosis of delirium tremens.

*August 3. Fibrinous Concretions within Heart.*—Dr. S. J. TODD presented a specimen of this, with the following history:—

*January 5.* Saw in my office R. B., mulatto, barber, æt. 35, stout and of healthy parentage. Habits are good, though he had formerly been very intemperate. The disease for which he consulted me was syphilis, at that stage when the later secondary and earlier tertiary symptoms seem to merge one into the other; the initial lesion had been contracted about two years previously. The symptoms all yielded to a course of mercury exhibited internally and by fumigation. The iodide of potassium was also given at the latter part of the treatment. In July of same year he again came under my care; this time with symptoms of dyspepsia, for which tonics and a regulated diet were ordered. He improved somewhat, but on the 17th I was sent for and found him suffering from an attack of hepatitis. The liver was enlarged, but at no time was there much febrile reaction. The heart was irregular in its action, but no signs of organic disease of that organ were found after a careful examination. Small doses of calomel were given, and with good effect, the patient returning to his business in three weeks from the date of the attack. I continued to see him from time to time during a period of nine months, as his old disease (syphilis) would occasionally manifest itself. On the 18th of May, 1866, was again called to see him, and found the same hepatic symptoms with anasarca in addition. The urine was tested and found normal, except a slight trace of sugar. Prof. G. R. Dove saw the patient with me at this time, and confirmed my diagnosis as to the absence of organic disease of the heart. Tonics and a nutritious diet were ordered, but no improvement took place as regards the dropsy, which steadily increased and soon became general. The severer hepatic symptoms subsided, and elaterium and the nitro-muriatic bath were given, the former relieving the dropsy somewhat, the latter without appreciable benefit. Nothing of interest transpired till the 1st September, when, on examining the heart for the third time, a regurgitant murmur was heard, and its action found regularly irregular, losing one beat in three. The patient was seen by Drs. A. T. P. Garnett and J. T. Young in consultation; and valvular insufficiency was diagnosed. The patient passed from under my care, but I learn from his medical attendant that the treatment was directed to improving his general condition and relieving the dropsy by the occasional use of cathartics, diuretics, and diaphoretics. He expired suddenly the 28th of June, 1867, and the following day, fourteen hours after death, I made an autopsy, assisted by Dr. H. A. Robbins.

Rigor mortis marked; abdomen enlarged and distended; lower extremities œdematous; abdomen punctured and gave exit to seven quarts of straw-coloured fluid. On opening thorax the pericardium was found distended with the same fluid to the amount of four to five ounces. It was firmly bound to pleuræ. In cutting the large vessels at the base of the heart a fibrinous clot of pink colour was seen hanging from the pulmonary artery, and being accidentally drawn out was found to be six inches in length, about the thickness of the forefinger, and terminating in a blood clot. On opening the abdominal cavity, the liver was found somewhat enlarged and firmly bound to diaphragm, and surrounding viscera by broad adhesive bands. It was slate coloured, and covered with circular yellowish spots, varying in size from  $\frac{1}{8}$ th to  $\frac{1}{4}$ th of an inch in diameter; its peritoneal coat was much thickened and easily detached, exposing depressions corresponding in size and shape to the spots.

The following is a description of the heart, which was carefully examined by Dr. Wm. B. Drinkard: Dimensions of heart perceptibly increased (weight and measurement not taken, examination being very hurriedly made); no appearance of fatty degeneration, nor of any change in pericardium. On opening heart all four of its cavities were found lined, and its orifices nearly occluded, by fibrinous concretions of a pale pink hue, elastic, possessed of a considerable power of resistance when torn away, and of a fibrous texture. They were closely applied against the walls of the cavities, and entwined amongst the columnæ carneæ and tendinous chords of the valves, in such a way as evidently to offer an obstruction to the free play of these latter during life. The columnæ carneæ were very much hypertrophied, some of them being of unusually large size. No abnormal appearance was discoverable in the endocardium; the fibrous deposits being simply in apposition with it, and not adherent, as they were very easily removed. On examining the condition of the valves, the aortic and pulmonary were found natural, retaining liquid very perfectly. The tricuspid and mitral valves were insufficient in a marked degree. The venæ cavæ and pulmonary veins had been cut off close where the heart was removed from the body, so that both auricles were opened. There was no change in the texture of the valves. Although all the cavities of the heart were dilated, yet there was no indication of hypertrophy of its substance, beyond that of the columnæ carneæ already noticed.

*October 5. Delirium Tremens treated successfully by large doses of Capsicum.*—Dr. C. M. FORD reported the following case:—

Mr. —, thirty-five years of age, nervous temperament; small stature; weight one hundred and twenty pounds. His regular habits for years have been six months temperate, and six weeks continuous drinking. First seen August 4th, at 9 A. M., when he presented the well-marked phenomena of delirium tremens, as muscular tremours, delirious hallucination, cool extremities, and inability to sleep. Ordered twenty grains of capsicum, to be taken at once in form of bolus. In less than half an hour after its administration he fell into a quiet sleep, which continued three hours. Upon awakening beef-tea was given, as also two ounces of whiskey. 2 o'clock P. M. Patient feeling better; the frightful hallucinations only present when eyes are closed. Another bolus of twenty grains of capsicum ordered, which again produced sleep in half an hour. 9 o'clock P. M. Patient still sleeping. Awoke at 10 o'clock, and took beef-tea and whiskey, after which he again went to sleep and slept all night.

*August 5.* At 9 A. M., just twenty-four hours from first visit, found the patient almost perfectly relieved, except diarrhœa, which commenced early in the morning. He conversed freely, and remarked that after taking the first bolus, he experienced a sense of warmth, first in the stomach, and then throughout the whole body. He stated that he had had four attacks previously, commencing like this one, and lasting from four to eight days.

*6th.* Patient walked to his office, and on 7th resumed his regular duties.

*October 19. Chronic Laryngitis and Tracheotomy.*—Dr. D. W. PRÉNTISS reported the following case:—

Mrs. M., aged 21; good constitution; healthy parentage on mother's side, father's family consumptive; both parents living; had been married

three years. From all evidence to be obtained has never had syphilis, nor is of tuberculous diathesis.

Present disease (chronic laryngitis) commenced in August, 1866, with sore throat, fever, hoarseness, and paroxysmal aphonia, and continued with exacerbations and remissions until December following, when it was partially relieved by treatment by Dr. J. F. Howard. (Dr. Howard's treatment was nit. silver in strong solution locally by mopping, alterative doses of blue pill until the gums were touched, and then iod. potassium gr. v, three times a day.)

I first saw the patient while attending her sister for fracture of forearm, January 28, 1867. At that time she was suffering from aphonia, speaking only in a whisper, and had a troublesome, irritative cough; the breathing was laboured and wheezing as in croup; there was soreness on pressure upon the larynx, though not marked. Laryngeal difficulty was evident. Thinking the trouble in breathing might be due in part to a nervous element, since it was paroxysmal, and wishing to determine in how far this might be the case, I ordered bromide of potassium in 10 gr. doses three times a day. No fever; appetite good.

*February 4.* No improvement in symptoms. Iod. potassium gr. v, three times a day substituted for bromide; blue pill gr. jss; ext. hyosc. gr. j; sulph. quinia gr. j, to be taken three times a day.

*16th.* But little change. Treatment continued.

*18th.* Treatment changed back to bromide of potassium gr. xx, three times daily, and an expectorant of syr. senega and morphia ordered.

This last course of treatment was continued up to March 3d, but without avail; difficulty of breathing very much increased during past few days, until the afternoon of this date (March 3d) the patient became almost moribund from suffocation. On reaching the house and finding this state of things, I immediately proposed tracheotomy, but the idea of cutting the patient's throat to save her life was so repugnant both to herself and friends that considerable time was lost before I succeeded in making them understand that that only remained to be done, and that it would be a neglect of duty to leave it untried.

I again entered the sick-room to prepare the patient for the operation, and found her, as I thought, *dying*. The face was livid almost to blackness, the eyes wide open and rolling, the lips blue, the whole countenance pinched, and having the expression that I have always considered hippocratic; the pulse at the wrist was imperceptible. The case seemed hopeless, and I turned away and left the house, giving the patient up to die. On the following day, however, greatly to my surprise, word was brought that she was still alive; that shortly after I left she had taken a favourable turn; the breathing became easier, and life, as it were, returned. On calling I found the patient breathing with comparative comfort, but extremely debilitated; pulse at the wrist barely perceptible, and the face still livid from the struggle of the previous day. I immediately called in Dr. N. S. Lincoln for consultation. He was of opinion that the present condition not being dangerous, the difficulty of breathing having to a great extent passed away, it would be better not to operate unless the symptoms should again become urgent. That same night (March 4th) another paroxysm occurred, similar to the one of the 3d, but even more severe, if that were possible without causing death, the friends not sending for a physician because they thought she could not survive until one

reached the house. A change again took place, however, and the morning of March 5th found the patient still numbered among the living.

*March 5.* In consultation with Dr. Lincoln, it was determined to perform tracheotomy at once, which was performed in the usual manner, a circular piece cut from the rings of the trachea, and the wound held open by wire hooks and an elastic band around the neck, improvised for the occasion. The opening of the trachea was followed by a long inspiration and a sigh of relief.

*6th.* Doing well, breathing quite comfortably through the wound in the trachea. Talks in an almost inaudible whisper.

*7th.* Much irritation of bronchi, with excessive expectoration through the tracheal opening. No rest during the night. Ordered 25 drops McMunn's elixir of opium to be taken at bedtime.

*9th.* Wire hooks removed, and double canula tracheotomy tubes introduced.

*20th.* Patient has been steadily improving up to date; has been sitting up since the 16th. Bronchitis and expectoration nearly disappeared. Voice still a whisper, but somewhat stronger. Attendance discontinued. Since operation, the air of the room has been kept carefully warm and moist, and the opening in the throat protected by a gauze veil.

I have neglected to mention, in the above record, that on the 27th of February, a week previous to the operation, I tried vapour inhalation by Richardson's atomizer; first, nitrate of silver gr. ij to f3j of water, and following it by watery solution of opium—administering the inhalation myself, and each time for half an hour by the watch. This course of treatment was continued until the severity of the paroxysms rendered tracheotomy unavoidable.

Dr. Prentiss called attention to the following points for discussion:—

1. The nature and import of the disease in the case: Is it simple, idiopathic chronic inflammation? or is it of a specific character?
2. The value and indication of tracheotomy in such cases.
3. The use and importance of the laryngoscope.

At the meeting of the Society held a week previous to the one at which the above paper was read, Dr. P. brought Mrs. M. for exhibition to the members. At that date (October 7th, 1867) she was in good health and spirits, able to follow her business of seamstress as well as ever in her life; was still wearing the tubes, without which she could not breathe easily; voice a whisper, made audible to the distance of ten feet, by closing the opening in the tube. She had become so accustomed to the tubes that they gave her no discomfort, as she could readily remove and cleanse them herself.

*Note.*—October 20, 1868. The above patient has been under my occasional observation ever since the date last mentioned above. She continues to wear the tubes, which she is not able to do without. They are sometimes closed with a cork for half an hour or more, a sense of tightness in breathing necessitates their being again opened. Mrs. M.'s general health is as good as it ever was; the only difficulty she has had, has been the occasional formation of an abscess around the external opening into the trachea, apparently caused by air getting between the external tube and the neck.

It was my desire to institute a course of treatment through the aid of the laryngoscope, but the disinclination of the patient to any further surgical or medical interference, prevented. However, I succeeded in

making two examinations with the laryngoscope—one on November 15, 1867, and the other November 18th. At the first, the epiglottis was found somewhat irregular in shape, but free from inflammation or swelling; the ventricular bands, cartilages of Wrisberg, and capituli Santorini of both sides, were enlarged to twice their normal size, and of redder colour than natural, but showing no signs of ulceration. The vocal cords, of which only a small portion could be seen past the swollen parts in front, presented a notched appearance, but no excrescence of any kind could be discovered.

At the second examination, three days later, considerable difficulty was experienced on account of the supervention of an acute attack, from an imprudent exposure to inclement weather.

It was, of course, necessary to close the tracheal opening, in order that the epiglottis might open fully, and this could not be tolerated for more than one minute at a time, because of dyspnoea.

The vocal cords could not be discerned at all, on account of the swelling; the larynx was entirely closed; its interior presenting just the appearance of a piece of raw beef. I was not able to separate its different parts, one from another with the eye.

This condition, I think, must have been similar to that which made tracheotomy necessary.

*December 7. Encephaloid Abdominal Cancer.*—Dr. J. F. THOMPSON presented a specimen with the following history:—

L. A. McC., æt. 33, lawyer by profession, but for several years previous to death a clerk in one of the government departments; poor health for the past two years, and had frequently consulted physicians. At this time the patient was conscious of a tumour in the abdominal cavity, which he himself thought was a disease of the stomach, and in consequence would diet himself, sometimes abstaining from meat for a long time; at other times from some other article of diet, which he imagined gave rise to the unpleasant sensations and severe pains which he experienced. He continued gradually to grow worse, becoming thin and cachectic, but was not confined to the house, nor prevented from attending to his ordinary duties, until a few days before his death.

Dr. A. Y. P. Garnett was called to see him, Oct. 28th, and visited him also on the morning of the 29th. He observed the tumour which at this time was well defined, and ordered appropriate remedies to relieve pain and improve his general condition. He was sent for again in the evening in great haste, and on arriving at the house found the man had died suddenly. It appeared that his sister had left him comfortable at 8 o'clock, and on returning to the room in half an hour found him dead.

*Autopsy seventeen hours after death*, in presence of Drs. Miller, Stone, Blanchard, Garnett, and Ashford.—Discoloration of sides and back of trunk and back of neck from venous congestion. Large tumour in right lumbar, encroaching upon the umbilical region; this tumour was situated just below the right lobe of the liver, and in front of right kidney; was covered with peritoneum, slightly movable laterally, but immovable vertically; it was free from adhesions in front and at sides, but posteriorly strongly adhered to coats of aorta and ascending vena cava. It seemed to be developed in the cellular tissue between these vessels, since they were separated to the extent of  $2\frac{1}{2}$  inches, leaving this much of the tumour between them, not at all adherent to the parts beneath. The

aorta and vena cava being cut above and below, the tumour was removed without difficulty. It measured  $9\frac{1}{2}$  inches in circumference, and weighed 12 ozs. ; quite soft to the touch, about the consistence of healthy brain, but at some points softer. The aorta was slit up posteriorly and its cavity found natural; the anterior surface was strongly attached to the coverings of the tumour, as already mentioned. The vena cava was opened in like manner, and at the centre of its anterior wall a rupture of its coat was discovered, which presented very much the appearance of an ulcer. It measured an inch vertically, and half an inch transversely, and was surrounded by a prominent border of clotted blood. This rupture, I believe to have been the cause of death. The surface of the tumour thus exposed, was concave, cup-like, as though a teaspoonful of its substance had been dipped out; abdominal organs healthy; heart perfectly natural; contained some blood, but the relative quantity in the two sides was not remarked; no clots in either side, but the pulmonary artery was completely filled up with a firm hard clot, which extended into each lung; lungs healthy and natural, with the exception of a small, hard tubercle in the right. No examination of cranium made.

An interesting question arises in this case as to what relation this rupture of vena cava had to the immediate cause of death. In my opinion it is not necessary to go farther. The cancerous matter, of which there must have been considerable, having entered the venous circulation, was carried through the heart directly to the lungs, interfered with the circulation in the smaller arteries and capillaries, producing the clot found in the pulmonary artery, and thus brought about the fatal result.



## REVIEWS.

ART. XIX.—*Précis Iconographique des Maladies Vénériennes.* Par M. A. CULLERIER, Chirurgien de l'Hôpital du Midi, etc. 12mo. pp. cxx., 488. Paris: Méquignon-Marvis, Éditeur, 1861-6.

*Atlas of Venereal Diseases.* By M. A. CULLERIER, Surgeon to the Hôpital du Midi, etc. Translated from the French, with notes and additions, by FREEMAN J. BUMSTEAD, M. D., Professor of Venereal Diseases in the College of Physicians and Surgeons, New York, etc. Royal 4to. pp. 328. Philadelphia: Henry C. Lea, 1868.

WHEN the first fasciculus of M. Cullerier's work was published, now more than seven years ago, it was at once perceived that it would form, when completed, the most beautiful volume upon the subject with which it dealt, that had ever issued from the press of any country; and hence it was with unmingled satisfaction that we heard the announcement that the French surgeon's magnificent treatise was to be reproduced in this city, in a style which would be in every respect worthy of the original, and yet which would be offered at such a price as to be readily attainable by every surgeon throughout the whole extent of the United States. The first portions of this splendid book have already formed the subjects of short bibliographical notices in the numbers of this Journal for April and July, 1868. But now that it is complete, and stands before the profession in its goodly proportions as a whole, it becomes our duty to offer our readers a more elaborate and a more critical review of its many and great excellences.

The first part of M. Cullerier's treatise is occupied with an Introduction, in which he writes successively of How to Study Syphilis, The History of Syphilis, The Virulence of the Disease, Its Contagion, Evolution, Inheritance, Pathological Anatomy, and Treatment. Our author admits in general terms but two venereal diseases, blennorrhagia or gonorrhœa, and syphilis. Indeed, M. Cullerier is perhaps the most prominent advocate, at the present day, of the so-called unity of syphilis. His translator, on the other hand, is well-known as a most able exponent of the "dualistic" theory of the same disease. While we entirely agree with Dr. Bumstead in his views upon this most important question, we cannot avoid expressing regret that he has retained the terms dualist and unitist in the sense in which they are here used. For in point of fact, the learned editor, and those who like ourselves would reserve the name *syphilis* for the general affection, the first manifestation of which is usually the indurated or so-called Hunterian chancre, are really as much entitled to the name of unitists (for we believe in the unity and individuality of syphilis) as those who, like M. Cullerier, couple together what we consider two entirely distinct diseases, and mistake an occasional error of diagnosis on the part of the surgeon, for an error of nature in confounding diverse pathological conditions.

Still, as the terms are generally understood in the sense here employed, we shall continue to make use of them, and hesitate not to avow ourselves, with this explanation, as dualists like Dr. Bumstead, and as convinced of

the utter fallacy and untenableness of the so-called unitist theory of M. Cullerier.

Syphilis must be studied not only at the bedside, but in books as well, for while a mere historical and theoretical knowledge of the disease would not enable any one to cope with the emergencies of practice, the difficulties of accurate clinical study are so much greater for syphilis than for almost any other affection, that, without the assistance derived from books, the student would quickly find himself lost among the protean manifestations of the disease, rendered peculiarly difficult of appreciation by the almost constant impracticability of obtaining a correct clinical history of any individual case.

"It was not without reason," says our author, "that Hunter said that the two great obstacles to the study of venereal diseases were ignorance and falsehood. Ignorance sometimes, it is true, on the part of the physician, but ignorance especially on the part of the patient. He often deceives us, but does so unintentionally, and in good faith, and at the same time deceives himself. For example, how many patients we meet in all classes of society who are ignorant that the least contact is sufficient for contagion, and who are persuaded that a venereal disease can only be caught by coitus, and even then only if the act be fully consummated."

It is not, however, patients only who entertain erroneous ideas upon this subject; as an illustration, we may mention that we have known the possibility of contagion from secondary symptoms utterly ignored by a public lecturer of high position, who gravely taught that a buccal chancre was *primâ-facie* evidence of a patient's indulgence in *rapports contre nature*.

*Confrontation* as a means of aiding diagnosis is rather slightly referred to by M. Cullerier as only useful in the early stages of syphilis; but, as well remarked by Dr. Bumstead, it is especially in the early stages that this method of investigation is important, and the only real limit to its value is the difficulty and often impossibility of inducing the persons concerned to submit to the examination. This is particularly the case with the ordinary hospital patient, who, above all others, takes literally the counsel of Lucretius (*volgivaque vagus venere*), and is rarely able to trace the origin of his disease to a definite source.

Inoculation is also referred to by M. Cullerier only to be condemned as useless and occasionally dangerous. We need scarcely say that no form of venereal disease should ever be inoculated upon a healthy subject; but inoculations practised upon the patient himself must be differently regarded, and recognizing as we do that true syphilis is not auto-inoculable, while the simple sore or chancreoid is so almost indefinitely, we cannot but think (again agreeing with the editor rather than with the author) that M. Cullerier acts unwisely in rejecting what we believe to be in many cases an extremely useful method of investigation.

Our author's remarks upon the history of syphilis are well written and full of interest. We cannot pretend to follow him through all his details, but may mention that he rejects the theory which would make the disease a novelty of the fifteenth century, and finds traces of its existence in the earliest historic and even prehistoric periods. Dr. Bumstead (as usual differing from M. Cullerier) believes true syphilis to have been unknown in Europe before the epidemic of the fifteenth century, and explains the supposed references to the disease, met with in the older authors, as descriptive of the chancreoid or simple sore, which he considers to have been

common in all ages. We have made the traces of venereal diseases among the ancients, in some degree, a special study for a considerable number of years, and think it but right to say that the result of our investigations agrees with that of Dr. Bumstead, in showing that there is no evidence that *true syphilis* was known or met with in those early periods; at the same time we do not regard the evidence which has been adduced to indicate its origin in the fifteenth century as at all conclusive, and are disposed to think that the origin of syphilis must be still allowed to remain in that obscurity which has continuously enveloped it, in spite of the labours of all syphilographers from the earliest times to the present day. We would refer our readers, in this place, to a most exhaustive and well-written essay which has been lately published by Dr. Renault, under the title of "*La Syphilis au XVe Siècle*," and which proves, we think, incontrovertibly, that it is impossible (at least at present) to fix an exact date as marking the time when syphilis first made its appearance.

The next section of our author's introduction—The Virulence of the Disease—brings up the question of the essential identity or diversity of the true *chancre* and the *chancroid*, or, as for some reasons we should prefer to call it, the *simple sore*. And here the doctrine which we hold to be correct is so clearly and so forcibly stated by Dr. Bumstead, that we cannot do better than quote what he says in his own words:—

"Now, the question is not, whether the initial lesion of syphilis always presents well-marked characteristics, or whether it can always be distinguished from a chancreoid. It is freely admitted that, aside from auto-inoculation, which is often impracticable, diagnosis is in some cases impossible. We may go farther and assert that even were it *never* possible to distinguish a true chancre from a chancreoid, the proof of their distinct nature would be just as strong as at present.

"The question is, whether the striking difference, a local character on the one hand, and a constitutional character on the other, which have long been recognized as pertaining to venereal ulcers, is constant in successive generations. If so, a specific difference will at once be established by the laws of classification of natural history; *a fortiori* by the less rigid laws of pathology. . . . Let it be observed that it is the result or effect which constitutes the criterion, and not the germ or the earliest development of the disease alone. What botanist would be satisfied to classify his species only from examination of the budding plants? What zoologist only from the ova or young of animals? Inspection of the individual, whether vegetable or animal, in its various stages of development, and especially in the stage of maturity, when its characteristics are most likely to be developed, is requisite to establish its identity. Are the laws of classification in *disease* any more exacting than in *health*?"

"Suppose a case: A farmer presents to a botanist two seeds similar in their appearance, and desires to know whether they belong to the same plant. From simple inspection the botanist is unable to determine, and it may be that the closest examination of the germ, even with the aid of the microscope, may discover no difference between the two. He plants them both. Although the early leaves shot up from the germinating plants are the same or similar, a difference gradually appears in their further development, and, in their maturity, their fruit is totally distinct. The seed of each mature plant is planted again and again, and the result is the same; each plant in its maturity is radically distinct from the other, and each preserves its characteristics in successive generations. The botanist believes that he has two species or genera; the farmer thinks that because the botanist cannot invariably designate the seeds or the seed-leaves taken alone, that any distinction is a myth. Which is right?"

M. Cullerier refers to the fact that a patient who has had constitutional syphilis may subsequently acquire a new chancre capable of communicating

the disease to healthy persons, and he considers this an argument in favour of the view that the chancre and chaneroid are essentially the same. But, as pointed out by Dr. Bumstead, there is no reason why a person should not have a second attack of syphilis as well as a second attack of small-pox or measles. We may add that many chaneriform lesions which are ordinarily attributed to a second syphilitic contagion are in reality but consequences of the original disease; such are the lesions well described by M. Fournier, under the name of the "*Pseudo-chancre induré des Sujets Syphilitiques*" in the numbers of the *Archives Générales de Médecine* for the months of June and July, 1868.

While our author theoretically, as we have seen, refuses to recognize any essential distinction between the chancre and the chaneroid, the following sentence will show that, viewing the matter as a practical question, his sound judgment and excellent common sense place him in a position not very far removed from those who disagree with him in theory:—

"It seems to me that instead of inventing new species, it would be more simple to recognize and to publish, if not as an absolute pathological law, at least as a very general rule, what sound and attentive observation led M. Ricord to discern; that is, constitutional immunity after chancres with suppurating buboes, and on the other hand, general poisoning after indurated chancres with indolent adenitis."

M. Cullerier's remarks upon the contagion of syphilis are full of interest. The older writers were ready to admit the transmissibility of the disease in a variety of ways. Not only did they consider all venereal ulcers capable of giving syphilis, but they thought the various secretions of the body were contagious, and they even supposed that the disease might be caught by means of germs floating through the air. The fact, however, soon became patent that in a great many of the mysterious cases of syphilitic infection, the mystery really was to be explained by the unwillingness of the patients to acknowledge having acquired the disease in the usual way, and a natural reaction followed in the belief of the profession (which finally settled down to the doctrine taught by Hunter, and adopted both by M. Ricord and M. Cullerier in the earlier portions of their career), that the primary form of syphilis was alone contagious, or, in other words, that a chancre could only proceed from a chancre.

The modern doctrine of contagion from secondary symptoms is, indeed, of recent origin, and is even yet not fully adopted by a great many surgeons; and yet it was distinctly indicated by Astruc more than a century ago, though his doctrine was confused with an erroneous belief in the contagiousness of the various secretions, which, indeed, he considered better established than the contagiousness of secondary ulcers.

The fact is now well established, and it is a most important fact, that syphilis is transmissible from certain secondary affections, and especially from the *plaques muqueuses*, or mucous patches. We confess that until we had acknowledged the truth of this doctrine, we found the cephalic chancre a sad stumbling block in the way of adopting what is known as the dualistic theory. It is well known that the cephalic chancre is almost always (it was till lately thought always) a *true chancre*, and that it is exceedingly rare to find a chaneroid or simple sore in this region. Now, on the belief that a chancre could only arise from a chancre, this is only rationally to be explained by supposing the difference between the hard and soft sore to depend on the locality of development, and not in any essential pathological diversity, especially as the chaneroid is of more fre-

quent occurrence on other parts of the body than the true chancre. But the moment we acknowledge the possibility of contagion from mucous patches, the matter becomes perfectly clear. The mucous patch, which is frequent in the cephalic region, gives rise to a true *chancre*, because they are both parts of the same disease, true syphilis; the mucous patch never gives rise to a *chancreoid*, because the latter has nothing in common with the source of contagion.

M. Cullerier gives no countenance, we are glad to say, to the idea of some surgeons that syphilis does not pursue a regular and definite course: he clearly asserts "The point of departure in constitutional syphilis is always a chancre, even when it is communicated by the product of a secondary symptom," and in a later portion of the volume he distinctly denies the existence of a primary form of bubo, the so-called "*bubon d'éclabée*." In saying this our author does not assert, nor do we, that every case of syphilis runs through precisely the same set of symptoms, manifested at exactly identical periods; on the contrary, we acknowledge the appropriateness of the term protean to this, perhaps more than to any other disease; but what we do maintain is that syphilis does not consist in a confused mass of phenomena thrown together without order and without reason, but that it has a course, a *natural history*, in fact, which can be studied, and which it is the syphilographer's part to study, with all the care and with all the attention he can bring to bear upon the subject.

The subject of *mediate contagion* is well discussed, and its possibility, if not frequency, clearly indicated. Contagion through the medium of vaccination is, in the author's opinion (and we agree with him), so positively established as no longer to admit of any reasonable doubt; it would appear probable, however, that by keeping the vaccine scab free from syphilitic blood, the risk of contagion is, if not abolished, at least greatly diminished.

M. Cullerier denies the contagiousness of any *secretion* of a syphilitic patient; the cases where saliva has been supposed to convey the disease are to be explained by the existence of secondary lesions in the mouth, and a large series of observations at the Hôpital de Lourcine has enabled our author to disprove the possibility of contagion through milk. With regard to the possibility of contagion through the seminal secretion, or, in other words, the impossibility of a child inheriting syphilis directly from its father, without the mother being infected, we are not prepared to go as far as M. Cullerier. We would rather subscribe to the view of Dr. Bumstead, that, while inheritance from the mother is greatly more usual, the *possibility* of paternal transmission cannot with safety be absolutely denied.

The *evolution* of syphilis takes place in accordance with certain general, recognizable laws. M. Cullerier sums up some excellent remarks upon this subject in the following words:—

"1st. Syphilis is a disease, the progress of which is regular. The succession of symptoms is subject to a law which may be laid down in advance; not so, however, the precise time of their appearance, which can never, perhaps, be assigned with certainty.

"Its evolution is more or less rapid.

"2d. Syphilis presents three well-marked periods, which always succeed each other in the same order.

"3d. The three periods of syphilis are the following:—

"A. The primary symptom, which is a manifestation on a healthy surface, of infection from contact of the virus. The characteristic of syphilis at this

period is in being essentially transmissible from a diseased to a healthy individual, from an infected to a sound surface. *B.* Secondary symptoms, a manifestation on the skin or mucous membranes of lesions which have a special character, and a necessary connection with the primary symptom, since they occur only when the latter has previously existed; the contact of these lesions is less contagious, but they are transmissible by inheritance. *C.* Tertiary symptoms, a manifestation of the same infection on the internal organs, the cellular tissue, the fibrous tissue, and the bones—a consequence of the primary symptom, but separated from it by the secondary stage.

"4th. If syphilis does not stop with its first period, but reappears, the symptoms always follow each other in the same order, without gap or inversion."

We have already seen that M. Cullerier does not believe in the possibility of syphilis being inherited except through the mother. His experience goes to show (and in this, Dr. Bumstead agrees with him) that M. Ricord is in error in acknowledging the tardy appearance of hereditary syphilis; the limit fixed by our author is one year from birth, and cases of syphilis occurring at a later age are to be considered as acquired, not inherited, though of course there is the possibility that symptoms may have existed within the first year without being recognized.

M. Cullerier's remarks upon the pathological anatomy of syphilis are brief, but clear; they do not, however, present any points which call for special remark. With regard to the question of treatment, we may say in general terms, that the primary form of syphilis requires local applications only; for the secondary symptoms, mercury is the great remedy; while for the tertiary manifestations, iodide of potassium should be used, either alone or combined with mercurials.

Having terminated his introduction, our author takes up in succession the various forms of venereal disease, beginning with blennorrhagia, or, as we generally term it in this country, gonorrhœa. This disease he defines as follows: "*Blennorrhagia* is an affection characterized by a muco-purulent discharge from the urethra, and accompanied by signs of acute inflammation." This definition seems to us both unscientific and incorrect. It confuses under one name several varieties of urethral inflammation, and it utterly ignores the fact that blennorrhagia may exist without the urethra being at all implicated. Our author himself says, on a subsequent page [p. 174], "Urethritis is the rarest of all the blennorrhagic affections in women," and without speaking of blennorrhagic ophthalmia, we may add that the disease has been met with affecting the rectum and anus [Chelius' *Syst. of Surgery*, South's ed., vol. i. p. 180, and Vidal (de Cassis), *Traité des Maladies vénériennes*, p. 145], the nose [B. Bell, apud Chelius, p. 199], and even the mouth [Baumès apud Vidal, p. 146]. Hence we should prefer to call blennorrhagia, a "virulent, contagious, muco-purulent inflammation of the mucous membranes," and its varieties would then receive the names of urethral, vaginal, rectal, ophthalmic, nasal, or buccal blennorrhagia, which would, we think, be equally precise and more consonant with correct pathological teaching.

M. Cullerier considers in succession the history, seat, causes, nature, symptoms, pathological anatomy, progress, duration and termination, diagnosis, prognosis and treatment of blennorrhagia, and of its more chronic form *blennorrhœa*, or gleet. Our author's remarks upon each of these topics are worthy of attention, but we have devoted so much space to the important doctrinal questions dealt with in the introduction, that we must be more concise in our review of the rest of the work. We must, however, protest against M. Cullerier's sweeping condemnation of the treatment of

gonorrhœa by injections, believing, as we do, that the large majority of cases will do better under that treatment than under the internal use of copaiiba and cubebs. In this view, we are glad to find we are supported by the opinion of Dr. Bumstead. The injection which we prefer in the earliest stages of gonorrhœa is that which is here recommended by Dr. B., viz., a solution of nitrate of silver of the strength of  $\frac{1}{4}$  grain to the fluidounce. This has occasionally effected a cure in our hands, in the course of a few days, without further treatment, but we have generally found it desirable, after a time, to substitute a combination of acetate of lead, sulphate of zinc, and either the acetate or sulphate of morphia, followed in the more chronic cases by injections of sulphate of copper. In one very obstinate case of gleet which had exhausted both our patience and that of the person affected, we succeeded in obtaining a cure by the use of a saturated solution of tannic acid. During the acute stages we have found advantage from the internal administration of flaxseed tea, containing in a pint of the liquid about a drachm of the bicarbonate of soda and half a fluidounce of sweet spirit of nitre. For the relief of chordee, M. Cullerier recommends pills of camphor and opium; we prefer to employ the same drugs in the form of suppository, and have occasionally used with advantage applications to the perineum of belladonna ointment, or even of bladders filled with pounded ice.

The next fifty pages are occupied with an account of the various complications of blennorrhagia as occurring in the male. M. Cullerier (very properly, in our opinion) rejects *metastasis* as a supposed cause of gonorrhœal epididymitis, or, as he still terms it, *orchitis*, believing that this complication is always due to an extension of the original inflammation—what the older authors would have called sympathy of continuity. For the treatment of this most painful affection, our author advises punctures of the tunica vaginalis, while he rather sneeringly condemns the incision of the tunica albuginea, as recommended by Vidal (de Cassis) and recently revived by Mr. Henry Smith, of King's College Hospital. We are in the habit of using the latter plan with the happiest results; the patient's suffering is almost instantaneously relieved, and the duration of the disease is shortened by from one-third to one-half of its period.

Considerable space is devoted to the subject of blennorrhagic ophthalmia. Here again we have to side with the American editor in opposition to the author, whose classification of the various affections which he includes under the same name, we cannot but regard as unscientific and likely to mislead. There is but one disease which should receive the name of blennorrhagic or gonorrhœal ophthalmia—(we should prefer for reasons already given to call it ophthalmic gonorrhœa)—and that is the virulent inflammation of the conjunctiva and underlying tissues produced by the inoculation of gonorrhœal matter. The other form of inflammation to which the eye is subject in cases of gonorrhœa, and which, though not so rapidly destructive, is perhaps more troublesome than the true blennorrhagic ophthalmia, is properly classed by Dr. Bumstead with what is known as gonorrhœal rheumatism, and to which we shall have occasion to refer again.

Nor can we in any degree approve the bleeding and general antiphlogistic course advised by M. Cullerier for cases of gonorrhœal ophthalmia: so entirely do Dr. Bumstead's views upon this subject coincide with our own, that we had marked for quotation a long passage bearing upon this ques-

tion, but we are warned by the growing length of this review to refrain from extended transcription and to refer our readers to the volume itself.

Blennorrhagic arthritis, or, as M. Cullerier would prefer to call it, *Synovitis*, the disease usually known in this country as gonorrhœal rheumatism, sufficiently well described, though its pathological relations are hardly worked out in accordance with the advanced state of science upon this topic. We have discussed in another place the affinities between this affection and surgical fever or pyæmia, and given our reasons for wishing that the name rheumatism were dropped and that of urethral or genital fever substituted. [See Analytical Notice of St. Bartholomew's Hospital Reports, Vol. III., in number of this Journal for July, 1868, pp. 217-218].

The last complication of blennorrhagia referred to by our author is Balano-Posthitis, generally called in this country balanitis, or external gonorrhœa. When complicated, as it often is, with phimosis, M. Cullerier advises intra-preputial injections of flaxseed mucilage, or other soothing substances. The remedy which we have found most serviceable in these cases has been packing the balano-preputial space with pieces of lint soaked in a solution of nitrate of silver, gr. xv-xx, ʒj. Under this treatment we have usually found the phimosis rapidly relieved, and the balanitis quickly cured.

Blennorrhagia in woman is next described by M. Cullerier, and, in connection with this subject, some excellent remarks are added upon vulvitis as produced by other causes than the contact of gonorrhœal matter. The following observation, if confirmed, would seem to be of importance in certain medico-legal investigations: "Inflammation limited to the clitoris is almost always a sign of masturbation; while if vulvitis has been caused by violence such as results from an attempt at rape or repeated coitus, it is at the base of the labia minora and at the fourchette that the inflammation commences." Urethritis in the female is believed by our author to be due in all cases to gonorrhœal contagion; it is, however, as has been already said, "the rarest of all the blennorrhagic affections in women." Metritis and ovaritis as sequelæ of gonorrhœal vaginitis are well discussed, and the best measures for the relief of each briefly indicated. M. Cullerier condemns the use of intra-uterine injections, which he has often seen followed by the most serious symptoms. Gonorrhœal rheumatism in the female is of rare occurrence, and has only been met with by our author in cases where the urethra has been affected.

In the next chapter the subject of Vegetations is taken up. These are met with in the neighbourhood of the genital organs, and have been frequently attributed to the existence of a syphilitic taint. It is however distinctly asserted by M. Cullerier that this view is not supported by facts.

"We find vegetations not only on individuals affected with simple blennorrhagia, the non-syphilitic nature of which I have too plainly and fully explained to need to return to it; but we find them also on persons who have never had any contagious symptoms whatever; who have never even had sexual intercourse, as in young girls with all the evidences of virginity. And this has been observed and distinctly seen by skilful men, whose testimony cannot be doubted."

As the disease is local in its nature, it is to be met with local treatment. Excision or ablation with the *Écraseur* or ligature for vegetations with a pedicle, and the various forms of caustics for those of a sessile nature are recommended: in every case, care should be exercised to destroy the base of the tumour, in order to prevent its reproduction. If complicated with



a syphilitic or other constitutional taint, suitable general treatment should be employed at the same time.

In accordance with our author's pathological theory, he regards all forms of chancre as symptoms of syphilis, and hence devotes Part II. of his work to chancres collectively, considering first the soft chancre, and subsequently the indurated variety, terminating his volume by chapters treating respectively of buboes, of secondary, and of tertiary syphilis.

M. Cullerier admits "the possibility of the artificial inoculation of a soft chancre on the face," but still doubts the existence of a cephalic soft chancre imparted by the ordinary means of contagion. An undoubted case of the kind has, however, as observed by Dr. Bumstead, been reported by M. Puche, and there is, besides, a certain amount of truth in the idea that the cephalic region is ill adapted to chancreoid ulceration, as shown by the experiments of the advocates of syphilization. The principal reason for the rarity of the cephalic chancreoid is, however, as already mentioned, the fact that this region is almost always infected by the contact of mucous patches, which, of course, produce true syphilitic chancres.

Another point on which M. Cullerier differs from most modern syphilographers is, as to whether the chancreoid or soft chancre has or has not a period of incubation. Our author believes that it has, and finds in this belief another argument for his favourite theory of the essential identity of the hard and soft chancre. Dr. Bumstead, on the other hand, agreeing with Ricord and the majority of the authorities of the present day, asserts that "the simple chancre has no period of incubation," and explains the apparent exceptions either by the fact of the case not having been properly observed (patients frequently not noticing a chancreoid till after several days' duration), or by the fact that in many cases of ordinary contagion, the virulent pus is deposited on a sound surface, which must be penetrated by maceration and erosion before actual inoculation can take place.

For the treatment of soft chancres, our author recommends the use of a mixture of sulphuric acid and charcoal, or, in certain localities, excision with the knife or scissors. The method which we are in the habit of employing, and which has proved entirely satisfactory in our hands, is to cauterize thoroughly the whole ulcerated surface *once* with fuming nitric acid, and to use afterwards a dressing of black wash or some other detergent and slightly stimulating lotion until cicatrization takes place.

The next chapter of M. Cullerier's work deals with the *indurated chancre*, and, as usual where matters of theory are not involved, our author's account of this grave lesion is most admirable. With regard to the incubation of the hard chancre, the following *dictum* of Dr. Bumstead's seems so important that we quote it for the benefit of our readers:—

"In the majority of cases of venereal ulcers followed by the general symptoms of syphilis, and in which a reliable history of the disease can be obtained, an interval of at least ten days will be found to have existed between infection and the appearance of the sore."

Our author returns in this chapter to several subjects that were dealt with in his introduction, such as those of mediate contagion and second attacks of syphilis. When a hard chancre is seen *very early* it may be possible to effect a permanent cure by cauterization or excision, but, unless at the outset of the disease, this treatment cannot be expected to prevent constitutional infection. M. Cullerier does not give mercury for the primary sore, and in the propriety of this practice most authorities of the

present day coincide, for it is pretty well established that mercury has no power to prevent the natural evolution of syphilitic symptoms.

Among the various complications of chancres, phagedæna is the most serious. In the serpiginous form it persists for a long period, one case having been under M. Ricord's care which continued to furnish inoculable pus after seven years. Cauterization is the best mode of treatment, but even this, as may be supposed, will often defeat the surgeon's expectation. We may add that in our own practice we have seen better results from the use of the actual canterly than from any other application. In some cases a mercurial course has effected a cure when other means of treatment have failed; these, as observed by Dr. Bumstead, are probably the comparatively rare cases of phagedæna occurring as a complication of the true chancre, and in confirmation of this view we may refer to two cases of phagedænic chancre successfully treated with small doses of calomel, in which the periods of incubation were respectively thirty and twenty-three days. [*Du Chancre phagédénique au Mexique, etc.*, par M. H. LIBERMANN, Rec. de Mem. de Med., Chir., et Phar. Mil., 3e Sér., t. xii. pp. 400-412.]

The next chapter treats of buboes, and is well worthy of careful study. M. Cullerier properly rejects the doctrine of the so-called "bubon d'emblée;" it cannot be too often repeated that the first manifestation in every case of syphilis is a chancre.

Three kinds of buboes are met with in practice. The simple, sympathetic, or inflammatory bubo, which may occur after injuries, or after gonorrhœa, may affect one or both sides, and rarely suppurates. The bubo of absorption or virulent adenitis (chaneroidal bubo) is a sequel of the soft chancre. It affects the superficial inguinal ganglia, always suppurates, and its pus is auto-inoculable. Every bubo that follows a soft chancre is not, however, necessarily a virulent bubo, for the chancreoid may give rise to an inflammatory bubo, in which case resolution can often be obtained. The true syphilitic bubo, diathetic adenitis, or adenitis symptomatic of indurated chancre, is usually bilateral, slow and indolent in its progress, and affects several ganglia constituting the *pleiad* of M. Ricord. It rarely suppurates, and its pus is not auto-inoculable.

For the treatment of the simple bubo M. Cullerier usually relies upon the use of blisters and the tincture of iodine; we may add that this is the treatment which we ourselves are in the habit of employing.

For the virulent or chaneroidal bubo, an incision more or less free is to be recommended, and the ulcer should then be treated as the original chancreoid. Evulsion of the disorganized gland is properly advised by Dr. Bumstead, and when the virulent character of the ulcer has been destroyed, the undermined skin may be advantageously excised.

The true syphilitic bubo is best let alone, unless it should become inflamed from some extraneous circumstance, when emollients and antiphlogistics may perhaps be required.

The next chapter is devoted to secondary syphilis, and gives a sufficiently satisfactory account of the various *syphilides*. From our author's remarks upon syphilitic enteritis, or intestinal erythema, we extract the following:—

"I infer from what precedes:—

"1st. That an enteritis, probably not ulcerous, may be developed in syphilitic subjects.

"2d. That this inflammation can, without any forced analogy, be assimilated to the exanthema of the pharynx and to exanthematous eruptions on the skin.

"3d. That there are cases in which the specific nature of this intestinal inflammation cannot be doubted.

"4th. Hence, that we are authorized to admit syphilitic exanthema of the intestines; and that it only remains for us still further to investigate the subject, and to add to our number of cases, at the same time avoiding as much as possible those sources of error which thus far have caused it to be misunderstood.

"5th. That it is very important that this affection should be thoroughly known, in order that we may not defer commencing the use of mercury, which, so far from being injurious, is, on the contrary, the remedy *par excellence*."

We shall not dwell on M. Cullerier's method of treating secondary syphilis, further than to say that he relies upon mercury, preferably administered by inunction, or if exhibited internally in the form of the bichloride.

From the following opinion, as to the treatment of syphilitic iritis, we must express our dissent: "As to turpentine," says M. Cullerier, "which has been so highly recommended—it is hard to tell why—I have never discovered any reason for sounding its praises." *The reason why*, we have no hesitation in declaring, is because, when properly used, it is one of the most efficient, as it is certainly the safest remedy for the disease in question. One cause for the disappointment which some gentlemen meet with in prescribing turpentine in cases of iritis, is that they give it in too small doses: ten drops, the ordinary dose in low fevers, will produce no effect whatever in most cases of syphilitic iritis. The proper quantity to be given in these cases is *one fluidrachm* at least three times a day. By combining this amount with a few drops of laudanum,<sup>1</sup> neither stranguery nor intestinal irritation will be produced. The pupil should be kept constantly stretched by instillation of atropia, and in cases where tertiary symptoms are present, iodide of potassium may be given in addition.

The last chapter is on Tertiary Syphilis, and may be considered on the whole accurate and satisfactory. The sections on visceral syphilis and on syphilitic affections of the nervous system are scarcely up to date, but perhaps as much so as we have a right to expect from the nature and scope of the work.

We have hitherto confined our remarks to the doctrines of M. Cullerier and his worthy editor Dr. Bumstead. We have now to consider the volume before us as a literary effort and as a mechanical production. The translation in the American edition is clear, usually accurate, and sufficiently elegant. It contains, however, some ludicrous mistakes. We are very sure that Dr. Bumstead is not responsible for these—his own classical work on venereal diseases would disprove this—and we must therefore suppose that he has trusted too implicitly to the "friend and partner," who, he tells us in his preface, has been his assistant. We regret this the more, because the work is really so admirable, and has been so magnificently set forth by the publisher, that these defects are more apparent from the general excellence of the volume.

We do not propose to dwell on this subject, for it is an unpleasant one; but the sacred duty of a reviewer requires us to mention it, and we shall

<sup>1</sup> This is an important point of which we have found a great many of our professional friends unaware: the following formula will be found usually satisfactory. R.—Ol. terebinth. f̄ss; Tinct. opii f̄ss; Acacie, Sacch. alb., aa q. s. Ol. gualtheriæ gtt. iv; Aquæ ad f̄vj.—M. Sig.—"Tablespoonful thrice daily."

merely point out a few marked instances in justification of the criticism which we have felt compelled to make.

On page 19, the name "*Arctius*" is twice mentioned. There is no such author, and the translator has confused together *Arctæus* (the Cappadocian) and *Ætius*, who are severally quoted by M. Cullerier. *John of Gaddesden* was an English writer, and in a book in the English language should not be called "*Jean de Gaddesden*" [p. 40].—Astruc wrote in Latin, and it is a mistake to quote detached words of M. Cullerier's French translation, to give emphasis, as if quoting the original [pp. 40, 83].—Burns (a Scotchman) did not write a "*Traité d'Accouchements*" [p. 53], but a work on the "*Principles of Midwifery*,"—There is no such word as "*pediculated*" in the English language [pp. 95, 181, 303]; and if there were, it would mean "afflicted with *pediculi*:" the English equivalent of the French "*pédiculées*" is *pedicellate*. The omission of a word on page 196 seriously alters the meaning of the text: the translation reads "a soft chancre is rarely found alone, and is *always* multiple;" M. Cullerier says "*presque toujours*."

We might multiply instances, but the above are sufficient. On the other side, we must give the translator credit for correcting a misprint of the French edition, in a Latin quotation from Gerard [p. 20].

The work is called an *Atlas*, and its plates are therefore to be specially noticed. The 76 plates of the original are here accurately reproduced on 26 plates containing 145 figures. These we have very carefully examined, and have no hesitation in pronouncing them to be the best illustrations of any medical work in our language with which we are acquainted. To say that they are not quite equal to the originals, is merely to say that chromolithographs are not quite equal to fine steel engravings coloured by the hand of a finished artist. As chromolithographs they are superb, and compare very favourably with the celebrated illustrations of M. Ricord's "*Clinique Iconographique*." The only criticism which we have to make on this subject does not concern the plates themselves, but is that Plate XIV. Fig. 9, has no printed description.

We do not say that this is the best book on venereal diseases in the English language, for we do not consider it at all superior, if indeed it be equal, to Dr. Bumstead's own most excellent treatise. It is, however, the most splendidly illustrated work in the language, and in our opinion far more useful than its French original. It is besides furnished at little more than one-half the price of the French edition, and must, we think, remain for a long time the most desirable book on venereal diseases attainable by the American practitioner.

J. A., JR.

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ART XX.—*Outlines of Physiology, Human and Comparative*. By JOHN MARSHALL, F. R. S., Professor of Surgery in University College, London; Surgeon to the University College Hospital. With additions by FRANCIS G. SMITH, M. D., Professor of Institutes of Medicine, in the University of Pennsylvania. Illustrated by numerous Wood-cuts. 8vo. pp. 1026. Philadelphia: Henry C. Lea, 1868.

THE author of this treatise is already favorably known to the profession as an excellent surgeon, and admirable clinical instructor. Endowed with mental qualifications, which have been liberally cultivated, he has not

confined his studies to his more immediate specialty, but has been allured into the inviting field of physiological research—a field which offers to its cultivators, at the present day, probably as brilliant prospects of success as at any former epoch. With what industry and care the author has been labouring in this department of science the present work affords fair evidence. Though modestly claiming to be only the “*Outlines of Physiology*,” a careful perusal of its contents will convince the student that the whole field has been thoroughly explored for treasures, new and old, and the entire domain of physiology, human and comparative, brought under closest scrutiny; so that no fact, experiment, or deduction of any importance, that has become known to the science of the present time, has been omitted.

In his preface, the author informs us that his work is designed with the special view to its utility as an *educational book*; and we must admit that he has fairly carried out his intention in the succeeding pages. Certainly, no higher claim to merit in a work, designed particularly for students, could be set up, than that it is truly *educational* in its character. This indeed involves a vast deal. It is to be presumed that all books designed for the student—certainly all text-books—are professedly educational; but it must be as certainly admitted that all do not come up to the true standard of this idea. How many works are constantly being sent forth from the press, which lack just this one essential qualification—their thorough adaptiveness *to educate* the student in this or that particular department of science? Such books may abound in facts and arguments of the greatest possible import; they may be perfect storehouses of knowledge and scientific research; they may be filled to repletion with the newest discoveries and experiments; and yet they may fail in the attainment of this great result.

Mr. Marshall's work is, we think, an exception to this class. He starts out with the idea of making everything as plain and simple as possible. He takes nothing for granted on the part of the student (a too common fault with authors of this class), except, of course, a proper elementary knowledge; but begins with laying a good substantial foundation for his physiological edifice, in a clear, familiar, and accurate, though compendious description of the human body in relation to its *anatomical* and *chemical* structure.

In an agreeable, concise style, he treats, first, of the General Plan of the Body, noticing, under this head, the bony skeleton, with its coverings of muscles, fasciæ, and integuments; its joints; its vessels and nerves; the great cavities of the body, cranial, thoracic, and abdominal, with their respective organs, all being sufficiently illustrated by appropriate diagrams, some of which are original. This is followed by a short practical working illustration, describing the mode of dissection of one of the inferior animals, such as a dog or a rabbit, which forms an excellent lesson for a beginner in physiological studies. Next in order, comes a general description of the Textures or Tissues of the Body, accompanied also with a practical illustration of the complex character of the organs, in a clearly described dissection of the tongue and larynx of a sheep. This is succeeded by a histological account of the tissues, copiously illustrated with familiar wood-cuts, and bringing the subject down to the latest authorities. As regards the nervous tissue, due attention is given to Prof. Beale's latest histological researches in relation to the origin and distribution of nerve-fibres. Under this head is found a sufficiently detailed ac-

count of the capillary system and of blood; also, of the epithelial surfaces (secreting membranes and glands); together with a table of the size of the different ultimate structural elements of the body.

After a very brief description of the Physical Properties of the Tissues, we have an accurate and clear *résumé* of the Chemical Composition of the Body; the proximate constituents being first considered separately, and afterwards the proximate chemical composition of the several tissues and fluids duly noticed, with a final reference to the ultimate chemical composition of the body.

Under the division of General Physiology, the author first discusses the Vital Properties of the Tissues. By the term *vital* here employed, we are to understand simply that these properties are manifested in *living* beings, or *during life*. Taken in this sense, and without any reference, at present, to the much-mooted question of the existence of a true vital force, the term is conveniently applied to describe certain properties peculiar to organized living beings, such as *contractility* (the muscular irritability of Haller), and *sensibility*—both of which are special, *i. e.*, confined to two distinctive tissues, the muscular and nervous, and which act only under proper stimuli; and likewise a third, or general property, common to all the living tissues, both animal and vegetable, and known as the *plastic force*, but named by the author appropriately, the *formative* or *organizing* property.

Perhaps no topic within the domain of physiological inquiry has given rise to a wider discussion than what has been named the *vital force*. All the earlier physiologists recognized the idea of a distinct separation between living matter and living force, just as the physicists of the past age considered that, either matter and force were completely separable, or else (at a later period), that while force was entirely separable from ponderable matter, it was closely united to an imponderable *ether*, or fluid. This is recognized as the doctrine of Descartes, Leibnitz, &c. Until within the last quarter of a century, the idea was all but universally prevalent, among physiologists, that all the functions of living beings were dependent upon a force, or power, quite distinct from the organs of the body, and altogether different from the ordinary forces which controlled inorganic bodies—such as the chemical, mechanical, dynamical, &c. To this unknown, recondite force, the term *vital* was applied, as serving a convenient purpose for disguising the ignorance of its real nature. In process of time, however, a closer investigation led to clearer views of the true character of the organic functions of the body. The researches of the chemist and microscopist unveiled the hidden mysteries of these processes, demonstrating conclusively that nearly all the living functions, both of animals and vegetables, are either simply chemical, or, more usually, chemico-mechanical. We need only instance the functions of digestion, respiration, and secretion, as proofs of this assertion. The beautiful doctrine of the Correlation of Forces, now so universally adopted, materially aided in bringing about this change of physiological views. But it also led—shall we say logically—a step farther. For when it was proven that heat, electricity, and magnetism were convertible forces, and that these again were transmutable into chemical force, and *vice versa*; and finally, when Joule so happily demonstrated by experiment the perfect convertibility of heat into mechanic force, it did not require much stretch of the imagination to suppose that any, or all, of these great forces of nature might be correlative with, or convertible into, the true vital force.

But let us inquire where, in the whole range of life-actions, is this so-called *vital force* more especially manifested? Certainly (all will agree) not in the functions of digestion, absorption, circulation, secretion, or respiration. These, although confessedly life-actions (*i. e.*, living), are not *vital*, in the strictest sense of the term. But how is it when we examine into the function of Nutrition? By nutrition is understood, in brief, the conversion of the nutritive plasma, derived from the blood, into new structure, appropriated by each distinct tissue of the body "after its kind," molecule by molecule, according to its own peculiar type, just as it is required, in the room of particles constantly disintegrated in the wear and tear of these tissues. This is the essence of the function, although there are other accompaniments, such as the absorption of the residual plasma back again into the blood, together with the effete portions of the disintegrated tissues.

Our author so well describes this process of Nutrition further on in his book (pp. 701-2), that we are sure it will afford a pleasure to the reader to let him speak for himself:—

"The second stage of the nutritive process consists in the exercise of a certain selective act, or so-called elective affinity, by the elementary parts of the tissues and organs, by which they assimilate to themselves such portions of the nutritive fluid as are suitable, either without, or with further change, to renew, molecule by molecule, their disintegrating substance. The nucleated cells of the epidermis and epithelium, the corpuscles of the gray matter of the brain, the tubular fibres of the white nervous tissues, the complex fibres of the striated muscles, the simple fibrous forms of the contractile fibres or fibre-cells of the organic muscular tissue, and of the fibrous and areolar tissues, and lastly, the consolidated intercellular substance, with the remnants of cells imbedded in it, as in cartilage and bone, each derives from the exuded plasma of the blood, and assimilates its required chemical constituents. The more rapid the waste the more active is the renovation, both processes being most marked in the muscular and nervous tissues, which produce and regulate all animal movement. This assimilative power of the tissue-elements is the persistent, primitive, nutritive force, inherited from the germ-cell. It is probably alike possessed by every cell, however remote in its descent from the parent-cell, and however modified so as to form parts of a composite animal or tissue, just as it undoubtedly is when a single cell constitutes the entire animal. This germ-force, or germinal force, is the essential cause of all nutritive phenomena, as it is of all organization, whether animal or vegetable. By it the cellular yeast-plant grows and maintains itself in fermenting saccharine solutions; the larger fungi feed themselves upon juices derived from decaying organic matter in the soil; the various tissues of the more complex flowering plants are formed and supported out of a common pabulum—the sap; and in the animal kingdom, the unicellular Gregarina, the sarcodous Rhizopod, the proteiform Amœba, the soft-bodied Culenterata, with their ectoderm, endoderm, and intermediate tissue; and lastly, all the complex and various organs of higher animals in the scale, and of Man are duly nourished. By this, the nerve-tissue attracts from the plasma outside the capillaries, its essential fatty and other constituents; the muscular fibre assumes the materials for fresh syntonyn; the cartilage, those for its chondriu; the bones, their peculiar animal and earthy materials; and so on of every other tissue of the body. The act of nutritive assimilation is said to imply a *metabolic* effect, operating in regard to the substance of the tissues; whilst, in development or evolution, this is associated with a *metamorphic*, which determines their form. Both kinds of nutritive phenomena are manifest chiefly, probably exclusively, in certain *areas* around the nuclei or corpuscles of the cells, the so-called *germinal centres*, which are therefore known as areas and centres of nutrition. The few cases in which, as in elastic ligaments, the nuclei or corpuscles are said to be absorbed, may only be apparent exceptions to the rule. Certain conditions of the blood and of the temperature of the body are essential to the

occurrence of nutritive actions. They are most active at the commencement of the life of any animal, and gradually decline as that advances, until the power to maintain the body is overcome by the forces which lead to its degeneration and decay."

The author also here quotes from Prof. Graham's published views of Osmosis, especially with reference to his idea that "colloidal substances may not only be regarded as forming the essential plastic elements of the body," but also "that in the organizing and assimilating process, these colloidal bodies do pass from the liquid into the pectose state, as they assume the form and characters of tissues and organs." Graham further considers that "the *energia*, or force peculiar to colloids, may be indeed the primary source of all the physical force appearing in the phenomena of vitality."

Assuming then, from what has been above stated, that it is in the function of nutrition, alone of all the organic functions, that the so-called *vital-force* is to be discovered, if anywhere in living beings, let us for a few moments examine the question, not forgetting that the essential part of this function is "the conversion of the plastic material into specific forms, which are endowed with specific functions." This, it will be admitted, is the highest possible attainment of all life-actions. It is inferior only to the sublime powers of the mind, acting out through the subtle avenues of thought and intellect.

To suppose that an amorphous albuminous substance, derived from the blood, has a power, *inherent* in itself, of being developed into the various forms of living tissue, will scarcely be maintained. Mere ordinary chemical affinities could never, out of this heterogeneous fluid, educe such a complex substance as brain, or muscle, or gland in animals, or as the alkaloidal compounds in plants. But may it not acquire this power by virtue of association with the ultimate cells, nuclei, or granules?

There are certain analogies in the inorganic world that would seem to sustain this idea. The well-known catalytic action of certain bodies—*e. g.*, platinum-sponge on a mixture of oxygen and hydrogen gases—is often adduced as an illustration; and such a catalytic, or, as it is termed, in this relation, *metabolic*, or rather *metamorphic* influence has been ascribed to the cell-wall, or to the nucleus of the cell. Admitting the analogy, or even the identity of action in the two cases, does not, unfortunately, give us a satisfactory *explanation* of either of them.

Dr. Bence Jones, in his late lectures at the Royal College of Physicians,<sup>1</sup> cogently argues against any special vital force apart from ordinary inorganic force, but ascribes it rather to a *mode of motion*, produced in the ultimate textures of the body, set in action by the chemical changes of the food and air received from without. After pointing out the fact that our ideas have been gradually undergoing a change regarding the connection between matter and force, in the physical sciences, he proceeds to reason in a similar mode for the biological sciences—those involving the idea of life. He sketches the change of views embraced by physiologists from the time of Hoffman, when several different vital fluids were supposed to pervade the animal body, each performing its own work. At a later day—we may say, in fact, in our own time—the prevalent doctrine has been, to use Dr. Pritchard's language, that this vital principle assumes the character of

<sup>1</sup> Croonian Lectures on Matter and Force, by Henry Bence Jones, A. M., M. D., F. R. S. (British Med. Journal, Nos. 382-3-4-5, 1868.)



a plastic or formative force. "This doctrine ascribes to a thing, which is supposed to be merely a species of matter highly attenuated, properties and agencies which belong to the highest power, and the highest intelligence." The leading idea of "the inseparability and conservation of matter and force" is in Dr. Jones' hand, the master-key to unlock all the secrets of the formation of life. There are several selections from these lectures that we would gladly quote, as bearing upon this subject, were it not that a full *résumé* of them was given in this Journal, October, 1868, page 508, to which the reader is referred for details. Dr. Jones' idea is that, as inorganic matter and inorganic force always exist together in living beings, "if a separable living force be also present, then we must admit that two totally different laws of force must be in action at the same time, in the same matter;"—a thing which, to him, appears to be in opposition to the unity of nature. We are rather to search for vital force "as the most peculiar of all the motions of which matter is capable." But if we should inquire, What can be the nature of this motion,? the reply must be, just what it always must be in reference to those phenomena in scientific investigations which are denominated *ultimate facts*—such as the essential causes of gravitation, heat, light, &c. Dr. Jones well observes, "If we are unable to grasp the marvellously complex double polar motion of compound molecules which constitutes electricity, can we expect to be able to form an idea of the most complex of all the motions of matter?"

In concluding this rather lengthy digression, we may remark that Mr. Marshall evidently holds the opinion that there does exist in the living body a certain peculiar force distinct from all other forces, of whatever name and kind, and displaying itself by a *special formative* or *organizing energy*; this force he distinguishes by the term "vital."

"The metabolic or assimilative process is evidently a chemical process of a higher character than ordinary chemical processes, or, as it may be termed, a *chemico-vital* process; but the metamorphic or plastic property is purely and absolutely a *vital* process." (p. 89.)

"There exists, however, in the living animal, as in the living vegetable organism, a *special formative* or *organizing* energy evolving the perfect animal or plant from the primitive ovum or ovule, developing its various tissues and organs, and conserving these from the commencement to the termination of its individual existence. The influence of this force, moreover, extends from the parent to the offspring, generation after generation. Its relations to the vitophysical and vitochemical forms of force, working in the body, are entirely unknown." (pp. 932-3.)

After all that has been said and written upon this subject, many persons will believe that it is a dispute rather about names than things; since even those, who oppose the doctrine of a *special* vital force, admit that some incomprehensible change is brought about in the ordinary forces of nature in *their transition into* this so-called vital force. For ourselves, we cannot help thinking that the argument is pushed too far, when the principle of life is reduced to nothing more than a mode of physical or chemical action, or a mere manifestation of motion, or of heat. Analogies may exist, which seem to level the barriers between them; but it seems to us that, notwithstanding all that has been hitherto alleged, the presumption is in favour of the opinion that life is something apart, and essentially different from all other kinds of force.

After taking a general view of the animal and vegetable functions, the author discusses, in a very interesting section, the Relations of Man with

the Animal and Vegetable Kingdoms, under the first division of which he gives us a succinct outline of the animal kingdom, with a sufficiently definite description of the distinctive varieties of animal life, and pointing out the true position of man in the animal series. Under the second division, we have exhibited the relations of man and animals with plants, including the points of resemblance and of distinction between animals and vegetables.

The division of Special Physiology comprises, of course, the great bulk of the volume. Under this general head we have treated, in sufficient detail, and in their appropriate sections, all the various functions and phenomena of the human body, commencing with those of animal life, and followed by those of vegetative life; the whole terminating with a consideration of the function of Reproduction, to which is appended a brief account of the growth of the body, its decay and death. Throughout this portion of his work the author has introduced what strikes us as a very happy and original arrangement by which the essential character of each of the great functions of man are impressed upon the student by a close and accurate comparison instituted with these same functions, as exhibited in the different classes of animals. At the end of each section, describing any particular function, to use the author's own language in the preface, "the general and essential characters of a function, as distinguished from its special characters in man, are illustrated by copious references to the structure and uses of the organs concerned in that function in the several classes of animals." It is certainly only by such a careful comparison, that we can arrive at a satisfactory result as to the true character of the bodily functions.

To examine critically each one of the foregoing sections would consume much more space than can be allotted to this paper; neither is it necessary, since so much has been already written, and ably written, upon the subject. We may, however, claim the privilege of making a few passing observations, here and there, in connection with some special subject, such as may be thereby suggested.

Under the general title of Motion, the author discusses the various kinds of movements in animals and vegetables. Four of these he classifies under the title of *vital*, viz., the muscular, ciliary, sarcodous, or such as occur in contractile sarcodous cells and protoplasmic; drawing a distinctive line between these and the purely physical, or physico-vital—such as the movements due to elasticity, osmosis, and certain recondite molecular movements.

The main point of interest connected with this topic is, What is the nature and cause of the movements in living beings? We may make these inquiries, first, in reference to muscular contractility. Mr. Marshall, after a pretty close examination of the case, adopts the conclusion most generally received, that the cause of muscular contractility is intrinsic, and is due to a *vis musculosa*, or *vis insita*, which is, in effect, the old Hallerian doctrine of irritability. But that this is not perfectly satisfactory to himself, is evident from the fact that he feels perplexed—as do all—about the *ultimate cause* of the attraction and repulsion between the sarcoous elements. Without allusion to the chemical theory of Liebig and others, he suggests, what has become a somewhat fashionable theory of late years, the polar or electrical doctrine, which involves the ingenious idea of an opposite polar arrangement, or a condition subsisting among the ultimate elements, by virtue of which the phenomena of attraction and repulsion would ensue. This idea receives a certain support from the

known fact of the development of both heat and electrical currents during muscular contraction. Allusion is also made to Prof. Graham's suggestive idea "that osmotic changes in the contents of the tubular sarcolemma of the muscular fibre, may possibly occur as essential conditions of its alternate contraction and relaxation."

Dr. Bence Jones, to whose recent discourses we have already referred, is of the opinion that muscular contractility, like all the other so-called vital actions, is only a *mode of motion* (to use Prof. Tyndal's expression), brought about by some antecedent equivalent motion. Referring to the earliest ideas of muscular motion as being connected with the soul, he next alludes to the succeeding doctrine of an innate power, capable of responding to external stimuli. Of this idea, Haller's doctrine of irritability is cited as the best exponent; but, according to the latest theory, its origin must be some antecedent equivalent motion. Professors Liebig, Playfair, and others, are of the opinion that the chemical changes in the nitrogenous matter of the muscles are the cause of motion. But, according to Frankland, Fick, and others, the amount of mechanical work performed is much greater than can be accounted for by the amount of change in this matter, as measured by the quantity of urea produced. Taking this as the true index, it would appear that four-fifths of the work must arise from the chemical action going on in the non-nitrogenized matters in the muscles, or in the surrounding blood.

These deductions seem, moreover, to be borne out by Dr. Parkes' experiments, by which it is shown that the motion of the muscle during exercise bears no relationship to the amount of chemical disintegration of the albuminous materials. He is, therefore, inclined to the opinion that "the action of the muscle is not connected with disintegration, but with formation;" and that, consequently, "it more rapidly disintegrates during rest than during exercise."

The real cause of ciliary movement is still a *questio verata*. Mr. Marshall, after telling us all that is known upon the subject, feels constrained to acknowledge that "the true explanation of the phenomena of ciliary motion has yet to be discovered."

The peculiar movements of living spermatozoa in the seminal fluid, though not distinctly alluded to by the author, are evidently classed by him among "the movements of animal sarcodous and protaplasm."

The section allotted to Animal Motion includes also Locomotion of Man and Animals on solids, in fluids and in air; Animal Mechanics, Prehension and Manipulation, Expression and Gesture, Voice and Speech. These subjects require no further notice, at present, than merely to say that they are treated of in a very agreeable and instructive manner.

Under the head of Sensibility, our author discusses very freely the subject of the nature and phenomena of the *nerve-force*. Some interesting experiments of Helmholtz in relation to the rate of conductivity in the motor and sensory nerves, both of man and the lower animals, are detailed. By a curiously contrived apparatus, the exact period of time required for a galvanic stimulus to pass through a particular nerve is registered; by which it appears that

"In the motor nerves of the frog, at a temperature between 52° and 70°, the rate of conduction was found to vary from 81 to 126 feet per second. In warm-blooded animals and in man, it has been estimated to be rather more than 200 feet per second. The rate of motion of an electrical current, travelling along a metallic wire, has been shown to be 462,000,000 feet per second. Light

travels about 40,000 miles in the same period. The rate of conduction of impressions in sensory nerves has been calculated, by Hirsch, to be about 110 feet per second. The same observer states that the rate of propagation differs in regard to the nerves of touch, hearing, and sight; but the numerical results obtained by him are variable. Some difference, however, may exist in different nerves, for contraction of the iris, in rabbits, occurs quickly on irritation of the third cranial nerve, but more slowly after irritation of the fifth (Budge). The rate of propagation is moreover influenced by the strength of the stimulus.  
\* \* \* \* " (pp. 223-4.)

The difference between the *electronic* condition of nerves and muscles is very satisfactorily illustrated by several diagrams, and the results of carefully conducted experiments are properly noticed.

As regards the true nature of nerve-force, the author, after rejecting the ideas, either "of a *special* force, proper to living nerve-substance—a *vital* force wholly different, even in kind, from any other force in nature," or of electricity, evidently inclines to the third view that has been proposed, viz., "a special form of the common force of nature, correlated to electricity, and through it to all the other forms of that force." (pp. 232-3.) After giving substantial reasons against considering nerve-force to be identical with ordinary electricity, he proceeds to say (p. 234):—

"Now, it is not supposed that the force acting in a nerve is identical with electrical force, nor yet a peculiar kind of electricity, nor even physically induced by it, as magnetism may be; but, that in the special action of a living nerve, a force is generated peculiar to that tissue, which is so correlated with electricity, that an equivalent of the one may, in some yet unknown manner, excite, give rise to, or even be converted into, the other. In this concatenation of the several forces of nature, physical and vital, the force acting in a nerve may also be correlated with chemical force, with the heat developed in the muscle, and even with the peculiar molecular motions which produce muscular contraction, and all its accompanying physical or mechanical consequences. Indeed, as it is more acceptable to the human mind to suppose that the quantity of force, like the quantity of matter in the existing order of nature, remains the same, and is never lost or annihilated, from such notion of the interchange of inorganic into organic, and of organic into inorganic force, must be entertained. On this view, the nerve-force is as it were nourished from physical force, as the living substance of the nervous tissue is fed from the inorganic materials of the dead world."

As respects *sensation and consciousness*, together with all the higher mental faculties, no attempt is made to explain their mode of action by reference to any sort of mere physical force, however sublimated. The author is evidently no materialist; but, acknowledging "the mystery" of the subject, he bows with a becoming reverence before the Divinity imaged in the soul of man.

The Cerebro-spinal and the Sympathetic Nervous System are sufficiently well described, both as regards their anatomy and functions. Nothing of importance concerning this interesting department seems to be omitted. Under the head of Sleep, a very brief allusion is made to the subject of *mesmerism and clairvoyance*. The latter is classed among the delusions of "spirit-rappers." These are confessedly difficult topics to handle, and the author evidently has little relish for them. The deep mysteries of some of the psychological operations may, possibly, continue to remain unexplained in our present condition of existence; but we presume that no reflecting person, who has given the subject any study, will deny *the fact*, that, under certain peculiar conditions, the mind of one person can so react upon and influence the mind of another, as to make the latter, so to

speak, reflect its own thoughts and feelings, and cause the individual to give expression to these thoughts and feelings in words. There are unquestionably evidences of this fact; the difficulty is how to explain it satisfactorily. But this circumstance does not, surely, constitute a sufficient reason for philosophers either to ignore or ridicule it. It is to be wished that some master-mind, uninfluenced by conceit or prejudice, would grapple with this knotty subject in psychology, and give to the scientific world the result of its investigation.

We pass by the different Special Senses, all of which are treated of with the author's usual care and discrimination, but which our space will not permit us to dwell upon; merely observing that the article on Vision is very full, in fact, exhaustive on the subject.

The Vegetative Functions next claim attention. These are classified under the heads of Digestion, Absorption, Circulation, Nutrition, Sanguification, Secretion, Respiration, and Animal Heat, Light, and Electricity. These all present a tempting field for passing remark, but we can only notice one or two of them very cursorily.

The description of the various organs of digestion, together with their separate functions, is graphic and clear, being appropriately illustrated with wood-cuts. As regards the composition of the gastric juice, one would suppose that if any point in physiology could be definitely settled, this ought to be the one; but it is not so. A note by the American editor gives us the result of some of his own and Prof. Rogers' experiments, made in the year 1856, upon the gastric secretion of the Canadian, St. Martin, chiefly with the view to determine the true nature of its *acid*. The results obtained were: "that the acid reaction was not due to phosphoric acid; that if hydrochloric acid were present, it was only in very small quantities; that the main agent in producing the characteristic reaction was *lactic acid*." (p. 530.) This was also, if we mistake not, the opinion of M. Bernard.

The description of the secretion and uses of the other different digestive fluids—saliva, pancreatic fluid, bile, and intestinal juices—is admirably given; it closes with a brief account of the Relative Value of Different Foods, and a most interesting statement of the Organs and Functions of Digestion in Animals.

Absorption is very well described, being divided into General Absorption, Absorption of the Food, and Intrinsic Absorption. The process is essentially a purely physical act—a true osmosis, as is clearly demonstrated by the author, as also by the editor, who appends an interesting note upon the subject.

Under the head of Circulation, we notice a clear and accurate account of the Action and Sounds of the Heart; together with a concise description of the *Sphygmograph*, and its practical uses and application in estimating the pulse. As regards the Capillary Circulation, the author is of the opinion that the efficient cause is the ventricular contraction of the heart, modified by the elasticity of the arteries (p. 674):—

"The real propulsive *cause* of the motion of the blood in the capillaries is the same as that of the arterial circulation, viz., the ventricular systole, modified in its effects by the resilience of the elastic coat of the arteries themselves."

But, that this cannot be the sole cause of the vascular movement in the capillaries, is shown by the one conclusive fact (not to cite several others) that a capillary circulation exists in the embryo condition of animals, before the development of the heart; and that the direction of the current

is *towards*, and not from the centre of circulation ; and also that it is found in some of the lower animals, that are entirely destitute of a heart. In truth, the cause of the capillary movement seems to be of a complex nature. Undoubtedly, in the higher animals, both the heart and arteries do contribute materially to the result ; but it has always seemed to us impossible entirely to ignore a certain action going on in the capillaries themselves, wholly independent of the *vis à tergo* of the heart and arteries. When we remember that it is in the capillary region that all the great functions of organic life are performed, it seems but natural to suppose that here would be manifested a force or power, which might be supplemental at least, if not the efficient cause of the movement in question. With our knowledge, at present so much extended, of the dynamics of the body, it appears to us that the author does not give due credit to the well-known physical law governing ordinary capillary attraction, viz., that the rise of fluids in capillary tubes is not only dependent upon the calibre of the tube, but upon the affinity between the sides of the tube and the contained fluid. Why should not this constitute a moving force in the capillary rete, both of animals and vegetables ? It is just here, as has been observed, that all the great *functionating* (if we may use the expression) acts of the system are produced. The blood is here incessantly changing its condition, by losing and acquiring certain constituents ; consequently, its relative relation to these tubes must be as constantly undergoing change ; and by analogy of reasoning there ought to follow not only a movement but a constant change both in the rate and direction of this movement—just precisely what we do observe in a microscopic examination of the circulation in the thin tissue of a frog's foot, or still better, in a partially incubated egg.

As has been explained by Prof. Draper, if two liquids be made to communicate with each other through a capillary tube, or through a network of tubes, for which they have an unequal affinity, a movement will ensue ; the one liquid will be displaced by the other, for which the tube has a greater attraction. Now to apply this to the circulation of the sap in vegetables, and of the blood in the capillaries : the different ultimate cells of the structure have a different affinity for different materials of the circulating fluid ; such materials are appropriated to these individual parts, and the circulating fluid having given up these materials has no longer the same attraction for those particular capillary tubes that it had before ; it is consequently driven from them by the superior attraction which is now exerted by a new portion of the fluid, which is destined, in like manner, to be replaced by another portion, and so on. Take the capillary circulation of the lungs for an illustration : Venous blood has just been propelled into these organs through the pulmonary artery ; in the capillary rete the interchange takes place between the oxygen of the inspired air and the carbonic acid of the blood ; but when the blood has become thus arterialized, it no longer has the same affinity for the capillary tubes that it had before ; hence it must be driven onwards by the venous blood behind it. Precisely the opposite affinities will operate in the capillaries of the other parts of the body ; for here the attraction being between arterialized blood and the tissues, the venous blood will be displaced, and driven out on the other side, by the arterial blood.

Certain pathological conditions would also seem to give support to this theory. In asphyxia there is an accumulation of venous blood in the lungs—a stasis, in fact, resulting simply from the deficiency of oxygen.

The interchange between this gas and carbonic acid not taking place, the change of affinity cannot occur between the vessels and the contained fluid; and there is nothing to push it forward through the pulmonary veins into the left side of the heart, even although this organ is doing its utmost to overcome the difficulty. Again, it is well known that the activity of the capillary circulation of any part of the body is dependent upon the *activity of the functional changes* going on in it, whilst the general circulation remains unaltered. The condition known as *active congestion*, or *determination of blood* is unquestionably dependent upon an undue functional activity of the part. This is well illustrated in the development of the testes at puberty, and of the mammary gland during lactation. The old aphorism "*ubi stimulus ibi fluxus*" is based upon these well-established facts.

It is true that our author alludes very briefly to the above theory, though he evidently attaches very little importance to it, dismissing it with the observation, that such an action of these vessels implies only "an exercise of elasticity in their walls: but this cannot be under any circumstances, a moving force in the circulation, but rather a means of adapting the size of the capillaries to the variations in their contents." (p. 675.)

Two other subsidiary or modifying influences over the capillary circulation are also overlooked: the one is a tendency to a partial vacuum in the vessels owing to the constant osmose through their walls, which would naturally exert a *vis à fronte* movement; the other is the influence exerted by the nervous system, which, though not essential, is very manifest. Familiar instances are exhibited in the phenomena of blushing and pallor, under emotion; also in the salivary and lachrymal secretions, under similar influences; and through the same agency, doubtless, the peculiar sensation experienced by nursing women, termed "the draught," which is often excited by the sight and even by the thought of the child.

The subject of Nutrition is well discussed, due attention being also given to its different pathological states, the uses of the several constituents of the blood in nutrition, together with some practical remarks on Hemorrhage and Transfusion next follow; after which the subject of the Coagulation of the Blood receives a full attention. Here, the editor appends a short note, giving Dr. Richardson's latest views on this phenomenon, as referred to in this Journal. [See No. for January, 1868, page 245.]

Under the head of Sanguification, we have a very interesting description of the structure and probable function of certain curious bodies, called by the author *ductless glands*, such as the Spleen, Supra-renal Capsules, Thyroid and Thymus Bodies, all of which are now generally believed to contribute essentially to proper sanguification, or to act, in the author's language, as *blood-glands*. In connection with this subject, we have also an admirable dissertation on the "Glycogenic Function of the Liver," considered as distinct from its office of secreting bile.

The subject of Secretion receives a due degree of attention; the true difference being pointed out between the secretions proper, in which new products are manufactured, so to speak, by the secreting gland-cells, and the *excretions*, which are reduced oxidized products, resulting from decomposition.

Of the different special secretions and excretions it is unnecessary to speak further than to say that the author has given a sufficiently full account of each one, dwelling especially, as was fitting, upon the urine.

The function of Respiration is very fully discussed in all its different as-

pects, physical, chemical and dynamical. With regard to the change of color of the blood, produced by respiration, the heretofore received theory has been that it is dependent on optical causes; being due to a modification of the refractive power of the corpuscles. In the shrunken or biconcave state, "their refractive power is increased, and a larger amount of reflection takes place from the surfaces of contact of the corpuscles with the surrounding fluid. Whilst in the distended state, their refractive power is diminished, and less reflection takes place." Although it is true that venous blood is brightened by contact with saline solutions, and arterial blood is darkened by contact with water, it by no means necessarily follows that this is the true explanation of the natural alterations of color produced by the respiratory process. Moreover, as the author justly observes, there is no positive proof that venous blood contains fewer salts than arterial blood. Besides, experiments go to show that when pure solutions of the coloring matter of blood are alternately agitated with oxygen gas and carbonic acid, similar changes in their colour result; in the former case, the hue being brightened, and in the latter, rendered dark.

The beautiful experiments by means of the spectrum analysis, which had already given such wonderfully delicate results in inorganic chemistry, have led to the tolerably settled opinion, first suggested by Prof. Stokes, that "the natural colouring matter of the blood (cruorin) is capable, like the colouring matter of indigo, of assuming, by alternate abstraction and re-introduction of oxygen, two states of oxidation, in which it differs in colour and in its action on the spectrum."

This *cruorin* is not identical with what is usually regarded as *hæmatin*; the latter being considered as an artificial compound, produced from the former by acids. The *cruorin* has a powerful attraction for oxygen, from which circumstance is supposed to result the special affinity of the red corpuscles for this gas. It seems further settled by these researches "that the oxygen which is carried through the body by the blood, is, to a large extent, actually chemically combined with it, *i. e.*, with the *cruorin* of the red corpuscles." (p. 832.) There is still, however, a certain amount of oxygen retained in solution by the liquor sanguinis.

Connected with the subject of respiration, we have some good practical observations on asphyxia, suspended animation, and the effects of breathing impure air. The appended remarks on the Respiration of Birds and Aquatic Animals are most interesting and appropriate.

Animal Heat, Light, and Electricity form the next subject of notice. Our author agrees with most modern physiologists in ascribing animal temperature to a true oxidation; the incidental influence of the nervous system is, however, duly recognized. Under this head, the subject of Spontaneous Combustion receives a very brief notice, sufficient, however, to show that the whole matter is to be regarded as apocryphal, no case of actual spontaneous burning of a living human body having been established by eye-witnesses. As the subject has, at times, become a matter of consideration in legal medicine, it may be proper here to cite the authority of Professor Casper, of Berlin,<sup>1</sup> as being entirely opposed to the idea.

Under the heading of the Statics and Dynamics of the Human Body, certain interesting and important questions are disposed of, such as the height and weight of the body; quantity and quality of food and its relation

<sup>1</sup> Handbook of Forensic Medicine, by Johann Ludwig Casper, M. D., &c. New Sydenham Society's Edition, vol. i. p. 304.



to the constituents of the body ; destination of the food in the living economy ; the organic and inorganic forces at work in the body ; the calorific and mechanical work of the body, and their relation to the food. Upon each of these questions the author shows his familiarity with all the latest experiments and deductions, which it is not necessary here to individualize.

The important function of Reproduction receives a thorough attention from the author. Rejecting, both as unphilosophic and unproven, the theories of spontaneous generation, he gives a brief summary of the experiments of Pasteur. The various modes of reproduction are then discussed sufficiently at large. The changes in the ovum, before and after fertilization, are well described and illustrated ; together with the account of the development of the several tissues and organs of the body ; the whole being concluded with a brief dissertation on Decay and Death.

From what has been said, the reader will readily gather that the work of Mr. Marshall is regarded by us in a very favourable light. As already intimated, it quite fulfils, in our opinion, the author's design of making it truly *educational* in its character—which is, perhaps, the highest commendation that can be asked. The additions of the American editor are necessarily few, but always judicious ; and we may congratulate him on having selected so excellent a text-book for the University classes.

J. J. R.

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ART. XXI.—*Discussion sur la Folie raisonnante. Société Médico-Psychologique. Annales Médico-Psychologiques. Paris, Numéros pour 1866 et 1867.*

*Discussion on Moral Insanity in the Medico-Psychological Society. Paris, 1866 and 1867.*

NOTHING in the medical history of mental diseases has excited more interest, of late years, than what is called Moral Insanity. And yet it would be difficult to find any subject of equal interest and importance in regard to which there is so much misconception of the essential points at issue, and so much misapprehension of the actual facts concerned. To this state of opinion there is also joined a kind of feeling growing out of the practical consequences of the doctrine more likely to foster prejudice than to promote the success of a scientific inquiry. The stoutest believer in moral insanity will not deny that his faith is shared by comparatively few, not only among men of general culture, but also among those whose kindred pursuits might seem likely to lead them to the same conclusions. We know that the mention of moral insanity in a court of justice is enough to excite a smile of derision, as if it were only an artful dodge got up for the purpose of screening a criminal offender, or, in some way, of preventing the due course of justice. That the same feeling pervades the medical profession, and not seldom appears among those who are particularly conversant with the insane, there is abundant reason to believe. It matters not that this form of disease is recognized by the most accredited writers on insanity, and that cases may be witnessed in abundance in every hospital in the land. It is, nevertheless, regarded as a crotchet of a few impulsive men who have mistaken a creation of fancy for the result of a true scientific

inquiry, or, at least, have endeavoured, by means of a paltry quibble, to pervert the true significance of facts. The strength of the prevalent sentiment is well illustrated by the fact that the believers in this specific form of mental disease avoid the use of its name on all forensic occasions, lest it might jeopardize the interests which they meant to promote. It is hard for men to move out of the old grooves in which they have long been running. They dread to abandon a course of thought which they have pursued in such respectable company, and are slow to believe that a change which seems so forbidding can possibly lead to better results. They are told that cases of insanity occur in which the intellect, as distinguished from the moral sentiments, is not deranged. But, they reply, *can* this be so? Insanity without intellectual derangement—is it not a contradiction in terms? And thus the evidence of sense is rejected, even, it may be, of their own senses, because it conflicts with a metaphysical dogma.

In this state of opinion and feeling, we are rejoiced to have an exposition of the doctrine of moral insanity by an authority well calculated to command general assent—that of men of acknowledged eminence in their profession, who have spent their lives in observing the insane, and who met in friendly council to compare their views and avail themselves of one another's results. This discussion took place in the *Société Médico-Psychologique* of Paris, at its meetings in the years 1866 and 1867, and was reported, for the most part, at full length, in successive numbers of that very excellent journal, the *Annales Médico-Psychologiques*. It brought out the views of all those men who stand foremost in this department of medical science, such as Jules Falret, Brierre de Boismont, Morel, Baillarger, Moreau, Belloc, Delasiauve. With the space at our disposal, we can do little more than to indicate the course of the discussion, adding a few critical suggestions to help the reader to a better understanding of the subject.

It was opened by Jules Falret, in a carefully prepared discourse, evincing a most extensive and intelligent observation of mental disease, and a happy faculty of description that has seldom been equalled. He begins with defining his metaphysical position, which consists in the belief of the solidarity of the mental faculties. The mind he believes to be a unit manifesting itself in various ways, but not an aggregate of many faculties having a quasi independent existence. This being so, he cannot accept the doctrine that the moral faculties may be diseased, while the intellectual remain in their normal integrity. M. Falret complains that writers on insanity have been too much governed by the views of metaphysicians, especially in their division of the mental faculties, and he insists that insanity should be studied clinically, like any other disease, and that diagnosis should be founded on pathological, not psychological, facts. And yet he denies the existence of insanity without intellectual derangement, solely because the mind is a unit and cannot be divided! He gives no other reason, and in his subsequent descriptions of cases and forms of mental disorder, he takes no pains to point out the intellectual lesion lurking beneath that scene of moral disorder which he presents to the eye of the reader. He admits the fact that, in many a case of insanity, the moral disorder is predominant, so as to mask entirely the intellectual. The difference between him and his opponents seems to be that, while the latter deny the presence of any lesion of the intellect, he does not pretend to see it, though he positively infers it.

Moral insanity was used by Pinel and his school in too restricted a sense,

in consequence of which they confined their views to a single trait rather than to the whole character of the case; and thus it happened that there was very little similarity between the cases which they described. Falret uses the term in a generic sense, and applies it to several groups of cases agreeing in the vast predominance of the moral disorder, but differing in the mode of its manifestation. To establish these groups on a pathological basis, and describe them with all possible exactness, he regards as the first and a most necessary step in the study of moral insanity. To the first of these groups he gives the name of *maniacal exaltation*, the essential character of which is an excessive excitement of all the faculties, an exaggerated and unnatural activity of the emotions, the intellect and the will, and a certain disorder of the actions, without much intellectual disturbance, or incoherence of speech. These patients superficially considered do not seem to be insane, for their discourse is connected and not irrational. They are incessantly active, both in body and mind. They undertake extraordinary and useless journeys; they sleep poorly, often rising to wander about in the night. They abound in projects, often abandoned as soon as conceived. Their ideas crowd upon each other and present a disorder of the thoughts, not certainly like the incoherence of mania, but equally remote from the natural and orderly sequence of ideas in health. The memory also partakes of the general excitation. Old and insignificant ideas, supposed to be long forgotten, are remembered. Long quotations from classic authors, lost since boyhood, are perfectly recalled. The power of original composition is increased. They talk and write continually. Their conduct is strange and improper. They visit people whom they never thought of visiting before. They neglect the little proprieties of life and rules of society. They embark in rash enterprises. They are often rude and insolent. Destitute of reserve or modesty, they resent all counsel and criticism. They are sensitive, choleric, and quarrelsome. They become mischievous, exacting, even malicious. Their eyes are quick to see and their tongues to expose, the faults and frailties of their neighbours. They misrepresent, slander, and lie with extraordinary malice and ingenuity. They delight in causing pain, trouble, and discord. None but those who have lived with them can conceive their infernal inventions and the annoyance and dissension they spread around them. In truth, their feelings and instincts are wholly transformed by disease. Once kind and gentle, they become violent, malicious, jealous, mendacious, and revengeful. Of all their moral delinquencies, perhaps the most constant and unscrupulous is their mendacity. In this group is included that form of disorder called *folie circulaire*, in which maniacal exaltation alternates with depression with an interval between of the natural condition. These states are the very opposites of each other, for, in the latter, the patient is still, listless, interested in nothing, except to deplore his own folly when exalted, lying in bed, perhaps, and shunning all company and conversation.

The next group embraces those cases where the moral disorder represents the first stage—the prodromic symptoms—of general paralysis. The duration of this stage may extend to several years, but usually it is confined to a few months. The patients resemble those of the last group more than they differ from them, but there are a few traits peculiar to the latter. The excitement is less uniform and continuous. They are fitful and capricious, easily passing from one extreme of emotion to another—kind and amiable one hour, irritable and difficult the next. Love and hatred, joy and sorrow, succeed each other instantaneously, or give place to utter

indifference. The will is usually active. The patient quickly passes from conception to action, but he lacks the perseverance and patience necessary to overcome obstacles and wait for final success. Always with a multiplicity of projects on hand, he is constantly changing. He strives to do many things at once. He writes letters, makes visits, changes his residence, dismisses his servants, and meddles with other people's affairs. Irregular habits, late hours, protracted absence from home, bad company, lavish expenditures, take the place of sobriety and economy. Most of these patients indulge in vicious practices quite contrary to their previous habits. Their moral sense being lost or perverted, they feel no restraint, yielding to impulse, without regard to etiquette, custom, or decency. They go about negligently or insufficiently clad, indulge in gross language, and are often prone to erotic acts. If engaged in business, a forgery or defalcation is the first manifestation of insanity. They may even steal from a shop window in open day, carry home their plunder, and soon forget all about it. Signs of dementia appear in their mental disorder from the beginning. Though obstinate and headstrong, a little tact will easily turn them from their purpose. They are readily imposed upon by those who find their interest in it, and are the last to see what is obvious enough to others. The memory fails, and many of their lapses from propriety proceed from unconsciousness of what they do. [The writer once examined a man whose business transactions had raised suspicions of insanity, but his conversation and his letters not only betrayed no irregularity, but were exceedingly correct and proper. It appeared, however, that at this very time he would turn up, when necessity called, in full view of windows where ladies were sitting, and go into a room full of company with the flap of his trowsers unbuttoned and open. He died within a year or two of general paralysis.]

Falret's next form of moral insanity, he calls the hysterical, and it is confined of course to the female sex. The mental manifestations have a decidedly hysterical complexion, but, while bound together by this common trait, they are as various as the varieties of the female character. Falret's description of this class of cases is remarkably graphic, and we wish our limits would admit of our quoting it *in extenso*. As it is, however, we must be content with presenting a few of its most prominent features. One of the most noticeable is the great mobility of all their mental states. They pass from exhilaration to depression, from tears to laughter, from the most ardent pursuit of an object to the utmost indifference towards it, from love to hate, from sympathy to repugnance. Their manifestation of emotion is full of contrasts. They are indifferent to the greatest afflictions and overwhelmed by trifles. The keynote of their habitual thought and feeling is the persistent conviction that they are opposed, contradicted, and thwarted by everybody at every turn. And yet they themselves are possessed by the very spirit of obstinacy and contradiction, never yielding to advice or entreaties, heeding no appeals to reason or sense of propriety. Another prominent feature is that of extreme duplicity and falsehood, and we doubt if any single feature of moral insanity is so common as this, in other forms of it as well as in this. These women are really *acting* all the time. They delight in deceiving and misleading, in exaggerating whatever they talk about, and simulating feelings they never possessed. They invent stories in which falsehood is so artfully coloured with truth as to deceive the very elect. Under the mask of virtue and piety, with the reputation of saints, they secretly abandon themselves to the most shameful acts. After the most violent scenes, the most disorderly conduct, and the

vilest language in the privacy of their families, they appear in public models of reserve, modesty, and propriety. So plausible are the stories of wrong done by their friends—those most bound to love and cherish them—that they gain the aid and countenance of the most wise and prudent, who are moved with indignation towards the husband, father, brother, or sister guilty of such unnatural wrong. In short, their life is a perpetual lie. Another trait of these patients is the rapid production of their thoughts, feelings, and actions. Ideas come and go in the twinkling of an eye. They take no root in the mind, but are borne away by the first wind that blows. They act from instantaneous, causeless impulses. When vexed they fall into an ecstasy of passion, reviling, screaming, kicking, tearing, and breaking. M. Falret thinks we have here only a form of nervous disorder, not a form of mental disease involving criminal and civil irresponsibility, though it may justly extenuate the improprieties committed under its influence. Between this state and that of hysterical mania proper, indicated by general disturbance of the intellect and disorder of conduct, a third is observed in which not only are the traits assigned to the first, but the ideas have become so absurd and the conduct so violent and unreasonable as to be altogether incompatible with reason and to constitute a true mental disease. Every person who has had much to do with the insane can bear witness to the mischief and scandal caused by the women of this class. Their passions, often highly erotic, rage without restraint, and, in spite of education and social position, carry them to the lowest depths of degradation. Most faithfully do the following touches bring before us an original which no medical men with any range of observation will fail to recognize. "Some, completely possessed by a jealousy of their husbands, without reason and against reason, pursue them incessantly with inquiries, mistrust, and suspicion, and embitter their existence by scenes of domestic disorder, or by a tyrannical espionage that deprives them of all liberty. Finally, passing from constant surveillance to threats and violence, they not unfrequently end by proclaiming their domestic troubles to the public. Others are content to tyrannize over their husbands at home, contriving against them or others schemes of vengeance, to the execution of which they devote all the resources of a sharpened intellect, and a persistent energy that nothing can weary or divert." In order to make sure that these persons are victims of real disease rather than monstrously criminal beings, Falret thinks we may discover by a careful scrutiny other morbid traits in the spheres of the intellect, the will, or the conduct. These complete the picture of the disease, and demonstrate what before we only suspected. But these farther proofs of the pathological character of the case may not be found, at least not by any means that we possess. Are we then to conclude that we are dealing with a form of moral depravity springing from the ordinary sources of vice, or remain in doubt while the exigencies of the occasion require immediate action? Falret does not tell us, but the traits he has so vividly described sufficiently indicate, even without additional proof, that change of character which is the best test of disease. To ascertain that the patient swallowed her urine or feces, or was grossly negligent in her dress or person, or indulged in any other shocking practices, would only show that the insanity, already obvious enough, has reached the highest stage of intensity.

Another form of moral insanity, Falret calls *conscious moral hypochondria*. The patient exhibits the ordinary signs of melancholia, such as vague and indefinite anxiety, a disposition to look on the dark side, and

great prostration of the bodily and mental forces. Nothing pleases, and life is a burden. Indifferent to everything, they have no active affection for friends, not even for their children; and the death of the nearest friends produces no tears. Their will is paralyzed, and they pass their time either in nervous restlessness or apathetic quietude. They entertain no delusive notions of ruin, guilt, persecution, or damnation, but their thoughts are slow, vague, and confused. They are oppressed by a vague dread of some impending evil, without the slightest idea of what it is. Sometimes a thought, desire, or instinct takes possession of the mind, and, under its control, they commit suicide or homicide.

The fifth and last form of moral insanity described by M. Falret, he calls *partial alienation, with predominance of fear of contact with external objects*. It is more akin to the active and expansive forms of partial insanity than to melancholia. It consists essentially in a perpetual tendency to return to the same ideas and acts. The delirious ideas vary much in different cases, but when once a particular train of fancies takes possession of the patient, they become his chief occupation for months and years. Some of them spend their time in perpetual ablutions, as if they could never get sufficiently clean. Some are perpetually dressing and undressing, as if they could never get properly arrayed. Some are in constant dread of touching something that ought not to be touched, with their hands, persons, or even clothes, either because it is unclean or unwholesome, or they might be accused of pilfering. In fact, every little detail of life is painfully affected by these unfortunates. They fear to walk, to sit down in other people's houses, or to open their doors, to shake hands with or brush their garments against others. They are fully conscious of their condition, they see the folly of their fears, and strive to banish them. In the early stage of this affection they are able to conceal their fancies from public notice. They pass a double mental life—one open, the other secret.

Besides these, M. Falret indicates, without describing, several other forms of moral insanity, such as the mania of persecution, slowly developed, and its delusions carefully concealed; the mental disturbances especially connected with hereditary influences; the brief attacks of transitory madness, in which the patients commit acts of violence while almost, if not altogether, rational in their discourse.

The subjects of moral insanity, M. Falret believes to be legally irresponsible, both in civil and criminal cases, without that exception made by some writers of a partial responsibility.

M. Delasiauve thought M. Falret's idea of the unity of the mind unsupported by facts physiological or clinical. Insanity may affect chiefly the intellectual, or chiefly the moral faculties. Persons possessed by a single fancy, like many of those described by Falret, he calls pseudo-monomaniacs, and some of these he regards as legally responsible.

M. Brierre de Boismont next read a long and elaborate paper of the highest interest and value, illustrated by many remarkable cases. The whole paper would repay a careful perusal, but we can barely glance at its most prominent points. Moral insanity is not a new and distinct species; it has long been observed in connection with all known types of alienation. It is a manifestation, exaggerated by disease, of a germ that exists in the sane man, but is held latent by his will. It is most commonly seen connected with maniacal exaltation, melancholia, and the intellectual and impulsive monomaniacs. It may present the delirious conceptions, halluci-

nations, and illusions proper to alienation, but its distinctive character is what has been called delirium of the actions, or insanity of the conduct. It has a stamp of peculiar malevolence, forming the despair of families and the torment of asylums. M. B. sees in it several forms, which he thus designates, viz: maniacal insanity; melancholia, or sad monomania; intellectual monomaniacal insanity, and instinctive or impulsive monomaniacal insanity, the last including suicidal, homicidal, hysterical insanity, dipsomania, and kleptomania; paralytic, epileptic, and circular insanity.

Moral insanity is distinguished by its antecedents, its symptoms, and its consequences. Among the first we may find maniacal or other types of insanity, abnormal traits, eccentricities, or nervous disorders. Whether or not it is accompanied by delirious conceptions or false sensations, it is always accompanied by disorders proper to mental alienation in general. It is not an insanity of recent invention, though but recently the subject of very exact investigations. Its essential character is insanity confined to the conduct. Of twenty-five cases collected by myself, all presented this trait. One patient used words of revolting obscenity, went indecently dressed, and would lie and calumniate. She denied everything she was taxed with, and then boasted of her deception. From time to time she was maniacally excited, requiring confinement. Another, well-born and refined, had great self-command before strangers, but, at the least contradiction or opposition, became furious, rolled on the ground, poured out torrents of abuse, and ended with bursts of laughter, or floods of tears, and threats of suicide. A third would listen to nothing, abandon herself to feigned anger, indulged in revolting filthiness, exposed what others carefully hide, and abandoned all domestic duties. In all the twenty-five cases there was an entire discrepancy between their words and their acts; and the latter left no doubt of their insanity. Even their conversation had a double character; for, while reasonable before strangers, it would become otherwise when with their usual associates, or when, for any reason, they ceased to exert self-control. They conceive a great dislike of those who have had charge of them, and are indefatigable in making grievous charges against them, which receive more or less credence according to the feelings and opinions of the parties to whom they are made. The records of hospitals bear ample witness to their perversions of truth and their calumnious inventions. They attribute to persons of known good character, language and conduct which their whole lives belie. They allege things that could not possibly have occurred under the circumstances. They assign motives that no reasonable person would imagine. Only the public disposition to welcome such calumnies can account for the non-perception of such gross absurdities. A lady, still young, afflicted ten or twelve years with circular insanity having long lucid intervals, was at two different times confided to my care (Brierre's). While depressed she had delirious ideas, hallucinations of sight and hearing, and thoughts of suicide. When excited she was very irritable, using bad language, and sometimes violent. She was quick at repartee, and her wit was lively and biting. She never talked nonsense. As the excitement subsided, she became sentimental, although reserved. Her imagination created a romantic ideal being, which, by one of those illusions so common to the insane, she seemed to identify with her physician. With the caution usual with physicians of asylums, her room was never entered save in company with a nurse. One day, however, she stole into my apartment, and began such demonstrations as necessitated precipitate flight. After repeating her attempts on several

other persons, she conceived a violent dislike to me. She made incessant complaints concerning the scene just mentioned, attributing the provocation to the wrong party. She even succeeded in obtaining a judicial investigation, but her derangement was so obvious that it amounted to nothing. Another, the wife of a well-known *savant*, was treated in our asylum for hysterical insanity. Eight years after her discharge, I was notified to make answer in a suit for false imprisonment brought by this old patient. During this long period the lady had often passed by the asylum, and only four months before the suit, had urgently claimed the hospitality of my daughter for herself and child, saying she had eaten nothing for twenty-four hours; and this hospitality she continued to enjoy for two months.

Most of these patients have a passion for writing, and people are surprised to find how much of this writing shows no sign of derangement. The subjects of other forms of disease, we may add, who are able to converse without betraying any token of insanity, will generally show it in their letters.

M. Baillarger here related a case of "monomania with consciousness," characterized by extreme fear of touching, or even seeing, writing implements, or paper containing written or printed words. Her disease first began in a dread of writing, for fear she might make mistakes in spelling, and be laughed at. Now, the mere sight of a pencil produces prolonged and violent agitation, amounting even to maniacal fury. She will tolerate no carpet, for fear of pencils hidden under it. She will enter a carriage only after a careful search. Her walks are taken with an attendant on each side, to hide from her sight shops where books and stationery are sold. Her attendants are not allowed to be absent for a moment, lest some stranger might ask her for pen or pencils. Hours are spent in shaking her own and her husband's clothes. She is constantly occupied with her fears. The mere mention of a letter produces a nervous attack. When visited by her physician, he was entreated to leave his pocket-book behind him, and not to mention a prescription. She also has exaggerated religious scruples—fear lest she has been impure, and an especially harassing notion that her sins are written down. She is aware that such notions are irrational, but she cannot help entertaining them. Her general health is good. Another patient was a man of excellent sense, save in an absurd fear which, for thirty years, led him to confine his walks to one particular plank in the floor of his chamber, and to subsist on dry bread brought from a distant quarter. Another, a lady of fine sense and sound judgment, refused to touch anything for fear of taking something of value.

M. Brierre de Boismont related the case of an officer who, for twenty years, was subject to a dread of touching copper. He was conscious of the folly of this fear, and had concealed it.

M. Alfred Maury asked if such cases do not conclusively prove the existence of that circumscribed delirium or monomania which M. Falret does not admit. To this the latter replied that the delirium is more general than it seems to be, while Maury remarked that in the officer just mentioned the existence of mental disease was not suspected by his brother officers nor by the soldiers.

M. Delasiauve stated that many "pseudo-monomaniacs" end their lives by suicide, and that he had collected forty such cases. *Diffuse partial delirium* well designates this condition.



*M. Baillarger* declared that facts of this kind are conclusive arguments against Falret's doctrine.

*M. Belloc* remarked that none of these cases appeared to him to be either mania or monomania, but only lesions of the sensibilities. Real monomania exists when a man is possessed by a fixed, false idea upon which he acts as if it were true. Insanity requires the coexistence of a delirious action with a lesion of the sensibilities. Take, for example, the case of a woman tempted to kill her child. "Take it away," she cries, "else I shall kill it." This is not insanity. The lower animals sometimes devour their young just after birth. But they are not insane; the only lesion is one of sensibility.

*M. Morel*. I do not admit the existence of insanity of the conduct unaccompanied by intellectual lesion. When perversity of conduct exists without a pathological condition of the nervous system, without disturbance of the intellect, it constitutes depravity, not insanity. The transgressions of the insane are the same as those of proper criminals. They commit theft, arson, suicide, murder, &c. Sometimes their deeds are premeditated; at others, they spring from irresistible impulse. There is a relation between the character of their misdeeds and the pathological cause. The subjects of general paralysis, for instance, steal, or buy without paying for them, the most inappropriate things. Their thefts have usually a character of peculiar originality, such as driving about all day without paying their carriage hire, and buying at random without money. One, on the morning of her betrothal, bought, without paying for them, a dozen each, of fans, handkerchiefs, prayer-books, and sets of dominoes, besides many other things which she secreted about her person. This revealed commencing progressive paralysis, and this diagnosis was confirmed. The subjects of cerebral softening steal in a sort of distraction. They pocket the knives and forks when they dine abroad. Their families habitually empty their pockets at night of the most incongruous articles. They attach little or no value to what they take, but seem to act automatically. A lady labouring under hysterical insanity had discharged several domestics for theft. She prosecuted one of them for theft, but suspicion being aroused, she confessed having, in several instances, placed jewels in the trunks of her domestics, for the purpose of incriminating them. She had also troubled neighbouring families with anonymous letters containing the most odious and improbable statements. In epileptics, theft is generally prompted by ideas of poverty, and appears only when the mind has become much impaired. The articles stolen are often either worthless or utterly beneath the wishes of persons in the patient's real position. People cannot appreciate the profound mental impairment that often transiently exists before or after an epileptic fit. It may be said in this connection, that it is doubtful whether avarice ever develops into a morbid tendency to pilfering. The manner in which an act is performed often indicates the pathological condition of the agent. If we know all the details of an unlawful act, we may generally infer the character of the pathological cause, and distinguish it from a similar act done under the influence of normal passions. Homicidal, suicidal, or incendiary acts, whether impulsive or premeditated, have a special character according as they are committed by a person under the influence of idiopathic or sympathetic cerebral disease; under the influence of hallucinations, or of epileptic, hysteric, or hypochondriacal neuroses, or inherited tendencies. Ordinarily, the nature and circumstances of the act lead the expert to a knowledge of the pathological cause.

*M. Belloc* reiterated his opinion that insanity cannot properly be predicated of any disorder unaccompanied by delirium. To be delirious, however, is not necessarily to use words devoid of reason. Delirium may be manifested by acts as well as words. It may exist without external manifestation. When the patient does things that imply that his mind consents to the nervous errors to which he is a prey, we know indubitably that his mind wanders. These acts of a depraved judgment are not of themselves delirium, but they are its sign, indicating its existence as surely as the most incoherent or foolish language. But should persons who yield to a nervous impulse without delirium be regarded as responsible for their acts done under this peculiar influence? Certainly they should not, any more than the subjects of hysteria or hypochondria should be made responsible for their acts. Mental alienation is not the only neurosis that produces irresponsibility.

*M. Brierre de Boismont* believed that some disturbance of the intellect is always present in cases of moral insanity.

*M. Delasiauve* read a long and elaborate paper in which he began by opposing the doctrine of the solidarity of the faculties. In moral insanity, writers have intended to depict a state of more or less outward calmness and reason, crossed by morbid movements having their analogues in the normal life. We are constantly agitated by emotions, passions, impulses and involuntary ideas. In consequence of nervous or sanguineous disturbance, may not the same phenomena, in graver forms and proportions, be produced without vitiating directly the intellectual operations? The mind, while continuing to perceive, to remember, to reason, and to will, may, none the less, be subjected to pathological anomalies. Jealousy, mischief-making, loss of natural affection, erotic passion, all may exert a sway which the victim laments but is powerless to resist. When insanity affects the operations of the reason, we have mania, dementia, general paralysis. When it affects the impressions, sensations, affections, inclinations, and instincts, we have a systematized delirium (monomania), or diffused partial delirium (pseudo-monomania.) The latter includes the cases designated by *M. Baillarger* as *monomania with consciousness*. *M. Belloc* declares that insanity necessitates intellectual disturbance, but the mental domain has always included the sentiments, affections, and instincts. *Delirare*, to leave the furrow. This may be done as well by derangement of these secondary attributes as by a direct vice in the reasoning operations. Is there then a reasoning insanity? No one doubts the existence of mania, dementia, or circular insanity, nor denies that, though capable of transmutation, they often persist with the same characteristics. Yet nobody supposes that each disease always expresses one definite pathological condition. I believe there is, unquestionably, a disease corresponding to the ideal of various writers, and more or less happily described under the names of reasoning insanity, reasoning monomania, moral insanity, &c. It is sanctioned by theory and verified by observation. It has its place among the diffuse partial deliriums. We may group such cases into several classes. First, we bring together those who, apparently rational, are the incarnation of fickleness, exaggeration, and mischief. They are constantly paying visits, entering upon hazardous enterprises, or inordinate schemes of charity. Some affect extraordinary piety; many are exceedingly erotic. Many become the scourge of their family, of the asylum, or the village, by their calumnies and misrepresentations; while others commit overt crimes. The second class is characterized by depression, generally with symptoms of

oppression in the head. Shocking and unwished for ideas intrude upon the mind. In mild cases, the patient is able to continue his usual avocations, and often to conceal his trouble for many years. Where the disease is more severe, or the power of resistance less, the patient soon succumbs, loses all natural affection and ordinary ambition, and falls into an apathy broken only by gloomy anticipations of evil. The convulsive nenroses may produce either of these forms of diffuse partial delirium. Hysteria is a frequent cause. Some cases seem to be intermediate between monomania and pseudo-monomania. The morbid ideas become fixed and limited, though the patient is still conscious of their falsity or depravity. Such would seem to be the cases of homicidal, and of suicidal mania, of pyromania and kleptomania.

The legal consequences of moral insanity received the attention of nearly all the speakers, but while they recognized the difficulty, also experienced here and in England, of making their views acceptable to courts and juries, they presented no special means for affecting any change in this respect. The remarks of Delasiauve may be taken as a pretty fair representation of the views expressed by the rest. All are agreed, he said, that no one is accountable for an act done under the direct influence of a morbid idea, but it is sometimes impossible to measure exactly the scope and influence of a diseased thought or sentiment, yet we can hardly doubt that, so limited is the range of morbid impressions, the patient may be justly responsible for many acts. The man who laboured under a morbid dread of soiling his hands with verdigris, would, certainly, not have been irresponsible for a larceny or rape, while an act of violence towards one who put verdigris in his way would have been justly excused. And the same principle holds in regard to civil acts, wills, contracts, testimony, &c. If they reflect the psychical aberration, they should be deemed invalid, otherwise not. But the civil acts of these patients should be regarded with the greatest distrust. No speaker contended that the morally insane should be responsible for any criminal act clearly within the range of their disorder. Even Belloc, who thought that many of them are, strictly speaking, not insane, did not regard them as responsible.

This interesting discussion, thus briefly sketched, presents several points to which we solicit the special attention of the reader. Here are many men of distinguished names, who have spent their professional lives in the study of insanity in the large establishments of France, and written elaborate works respecting it, proclaiming their common belief in the existence of a kind of mental derangement consisting chiefly, if not entirely, in disorder of the moral powers, the sentiments, affections, and instincts. They agree in admitting that in some of these cases there is an obvious derangement of the intellect. In regard to the cases in which the disorder seems to be confined to the moral powers, some believe that, *ex necessitate rei*, the intellect is actually, though not apparently, affected; while others believe that the intellect is not, in any true sense of the term, disordered. It is thus abundantly established that there are cases of insanity that cannot be called mania, or melancholia, or dementia, but may be as clearly and exactly defined as those that belong to either of these classes. Many of them more so, in fact, for what disease in the whole nosology is characterized by traits more uniform or more graphic than circular insanity, or what Falret calls, conscious moral hypochondria? Certainly, no one could fail to recognize any of these forms of disease, in actual practice. A difference of opinion in regard to some particulars, in descriptions of the same disease by different

observers, does not surprise us ; much less would it lead us to conclude that they were all mistaken and were describing a mere figment of the imagination. It has been somewhat fashionable, especially among English writers, to decry the stand taken by Pinel, and represent it as untenable, but nothing can be more unjust. Like most discoverers of a great truth, he failed to perceive the full range of its application. That was reserved for his successors, who had only to follow the track of inquiry thus pointed out, to find it soon widening into a broad and ample field of knowledge. Of course they differ from him, but it is a difference that implies no conflict. "When I resumed at the Bicêtre my researches on this disease," he says, "I was not a little surprised to see many patients who never manifested any lesion of the intellect, but were governed by an instinctive furor, as if the affective faculties alone had suffered lesion." Have not the members of the *Société Médico-Psychologique* observed the same thing? They have observed that and something more. They have found many cases not governed by an instinctive furor, but none the less free from all lesion of the understanding, and, by means of their more abundant opportunities, have been able to form them into groups having some uniformity of character.

The presence or absence of intellectual disorder is but one among a host of traits which mark the disease, and nosologically considered is of little consequence. In its forensic bearings it is of great importance, and therefore, it may be worth our while to inquire a little into the merits of that question.

By some it is contended, that in moral insanity a disorder of the reasoning faculty always exists, though sometimes in a latent condition, or so slight as to escape attention. This idea receives some support from the fact that in other forms of mental disease, delusions and other signs of a disordered understanding do often remain concealed for lack of a suitable opportunity for their display, and especially from the fact, that in many cases of moral insanity, intellectual disorder though absent in the early stages of the disease, becomes apparent enough in the last. Unquestionably, it is a well-known pathological law, that serious lesions may exist in the bodily organs without giving any indications of their existence ; but a negative fact like this furnishes no proof of a certain positive fact. If it gives no indications of its existence, our belief in it must be solely a matter of conjecture, of no value whatever except as a guide to some demonstrable result. Unquestionably, too, certain manifestations of mental disease do not occur sometimes, only because the fitting occasion therefor is not presented : but that does not help the matter at all, because in these cases of moral insanity where no intellectual disorder appears, the most abundant opportunity is afforded for its display. The patient is at large, goes and comes as he will, makes visits, directs his domestic concerns, engages in business, and in all his movements, is free to do or not to do, to speak or keep silent. What better opportunity could he have for displaying the inmost thoughts and feelings of his soul? Neither do we deny that a symptom absent in one stage of a disease, may appear in a subsequent stage, but that fact would not warrant us to believe that this symptom actually existed from the first. Is it so that we understand the course of disease? Does any one imagine in any conceivable instance, that the various lesions that constitute our idea of disease, all begin simultaneously? If we know anything surely, it is that these lesions occur successively, and so long as the presence of any of them cannot be proved by positive evidence, we conclude that their time has not yet come. In mental, as well as in every

other protracted, incurable disease, the progress is from bad to worse. Idle ever changing fancies pass at last into strong and gross delusions; careless, inconsiderate, heedless manners gradually change into brutal ferocity, and the power to reason correctly about many things is finally succeeded by chaotic incoherence and stupidity. Moral insanity often passes into general mental disease, but this fact is no proof that the delusions which mark the latter existed from the beginning in a latent condition.

People with a metaphysical turn of mind believe with M. Falret in the solidarity of the mental faculties, and, believing the mind to be a unit and not susceptible of division, they conclude that in the apparently most partial derangement the whole mind is unsound. If nothing more is meant by this than the obvious truth that the various faculties are mutually dependent, acting together harmoniously in the production of a common result of which the best possible condition implies the highest degree of health and soundness, no one would dissent from their conclusion. Every work of nature or of man is constructed upon this principle. In the animal economy it is visible to the meanest understanding that if one member suffer all the members suffer with it. But it is no mark of wisdom to confound mere sympathetic affection with the kind of suffering experienced by the member which is the seat of the primary and principal lesion. A simple boil may quicken the action of the heart, and thus put every organ into an abnormal state. But we do not say in such a case that the heart and stomach and lungs as well as a portion of the skin and cellular tissue are all diseased. Let the balance-wheel be suddenly lightened while the engine is running, and the quiet, easy, regular play of the machine is followed immediately by irregularity and disorder. When such an event happens, nobody says it is the piston-rod, or the steam-chest, or a cut-off which is the seat of the trouble, though they all respond, each in its own way, to the derangement of the balance-wheel. Why so common and obvious a distinction should be overlooked in the present case, it would be difficult to tell. The brain is the material organ of thought and feeling, and, without the aid of phrenology or any other system, we are warranted in believing that there are intimate relations between certain exercises of the pure reason and the moral affections, and particular portions of the brain. Every pathological analogy lead us also to the conclusion that every lesion does not necessarily pervade the whole cerebral substance, and therefore being partial and local, the mental disorder resulting therefrom may be partial and local. But however partial the lesion may be, it may affect sympathetically the parts around it so as to impair their tone and elasticity, and thus vitiate, not the nature of their functions, but the vigor and correctness with which those functions are performed. Many other diseases, dyspepsia, consumption, gout, often produce this same effect, but nobody supposes the patient to be insane. If this were a question of pure metaphysics, there might be some reason for the belief in question, but it must be considered that the brain is not a unit, in the sense in which that term is applied to the mind, but a heterogeneous organ the different parts of which, all analogy teaches us, exercise different functions in the mental economy.

There is another notion sometimes expressed on this subject, which seems to be the offspring of a narrow metaphysics rather than of an enlightened physiology. It is said that so long as the intellect is untouched by disease, the patient is not bereft of reason, in other words, is not insane. He is still able to discern the right, the good and the true,

distinguishing them clearly from the wrong, the bad and the false, and consequently can resist the suggestions of his affections and passions, even though intensified by disease. But it is a great mistake to suppose that all the elements of responsibility reside in the intellect. In that, no doubt, lies the perception of good and evil, but it is in the will and the action of the affective faculties that we find the power of seeking the one and avoiding the other. Each is powerless in accomplishing the ends of our being without the co-operation of the other. Conduct, character, aspiration, are the result of their combined and harmonious action. This relation is vitiated by the intrusion of disease, and it is immaterial where exactly the disease is seated. The intellect which is bound to control the will while the latter is endowed only with its normal forces, is powerless before it when stimulated by disease. The man who commits murder under an irresistible impulse springing from disease is no more responsible than he who does the same thing sincerely believing that he is obeying a divine command. The essential fact is that the normal relation between the intellectual and the affective faculties is deranged by the presence of disease, in consequence of which the result of that relation, viz., complete moral freedom, is necessarily destroyed. To say then that a person is sane and free and responsible so long as the intellect is not deranged, however deeply his moral nature may be diseased, is simply to ignore one of the most obvious facts in cerebral dynamics.

This question is important not so much for its pathological as its forensic relations. The expert who believes that there is no insanity without intellectual derangement, is powerless before the courts in cases like most of those described above. He regards them as insane and clearly entitled to plead insanity in excuse for their acts, but as no intellectual derangement is apparent he is obliged to adopt the strange assumption that it is there, though he does not pretend to see it—a sort of constructive presence to be recognized only by an exercise of faith. Now, faith, though one of the strongest proofs of a profoundly religious spirit, is but a poor foundation for a scientific deduction. Courts rigidly insist on positive, tangible proofs. Even opinions, though admitted as evidence, are worthless to them, except so far as they rest on facts, but worse than worthless are conjectures without the slightest pretence of support in actual fact. This doctrine of the constructive presence of intellectual lesion would, in practice, contribute as little to the benefit of the prisoner as it would to the reputation of the expert. Are such persons then as those who were the subject of discussion in the French society—who abound in private life and are found in every hospital for the insane—are they to derive no benefit from the plea of insanity in courts of justice? This, certainly, is the legitimate effect of the position that intellectual derangement must necessarily exist, whether apparent or not, in every case of insanity. The proper course of the expert is to say that the person is insane, and that the insanity is confined to the moral or affective powers, so far as he can see, being manifested in the conduct and not at all in the conversation. He thus neither affirms nor denies the existence of intellectual lesion; he simply says that none is perceptible.

It is high time that the subject of moral insanity were better understood among the medical profession. It would be hard to find any other subject within the range of their studies on which opinions are more positive or more devoid of foundation in exact knowledge. The effect of this deficiency is now painfully observed in the diverse reports of commissions, and

the conflicting testimony of physicians on the witness-stand, where men, not without some claim to authority, with the same facts before them, come to opposite conclusions. The obloquy thus brought upon the profession, the loss of popular confidence which it occasions, should be a sufficient inducement for physicians to study this subject as carefully and thoroughly, to say the least, as they would any other. And let them be cautious, as they value their own reputation, how they treat with contempt the opinions of men who have devoted their lives to that particular branch of the science to which they themselves have given the least attention.

This discussion furnished the first attempt to classify the various phases of moral insanity. To generalize the results of observation is an important step in the pursuit of knowledge, for the value of any collection of facts must depend on the number and character of the relations we discover between them. In the case before us anything like exact classification is out of the question, and the members of the *Société Médico-Psychologique* wisely refrained from doing more than to group together certain cases that present an obvious resemblance in many of their principal features. They do not pretend that these groups are as precisely defined as the classes, orders, and genera of natural history, though they may serve the same purpose, as guides and helps to the inquirer. We doubt if the various forms of moral insanity can be exactly defined any more than those of mania or dementia. True, they are very diverse, and far more numerous than the early observers supposed, and so far as they indicate that fact they certainly serve a useful purpose. We admit that the groups here presented are founded in nature, but it is nature observed under a peculiar aspect—an aspect coloured by the education, temper, and opportunities of the observer. The result is precisely what might have been expected. The groups so elaborately set forth by Falret are scarcely recognized by Delasiauve, and probably every member who should undertake to classify his observations would produce something peculiarly his own. Falret intimates that his work is only a beginning, and that fresh groups yet remain to be described. But we are surprised that even in this first attempt, the more circumscribed forms, such as the impulses to homicide, incendiarism, and theft, should have been entirely ignored. In making a group out of "the mental troubles especially connected with hereditary influence," he is hardly supported by facts. Hereditary influence may be seen in every phase of insanity. It is peculiar to none, and is the most potent agency in the production of them all. The term *hysterical*, which Falret, following some of his countrymen, has applied to a large group of female cases, is not very fitly chosen. Of late years it has been much used to signify whatever is obscure or strange in the disorders, mental and bodily, of the fair sex. That it is an expression of ignorance rather than of knowledge can scarcely be denied, and, in the present case, we are obliged to regard it as no exception to the general rule. Certainly many of these cases contain no element of hysteria, in the strictly pathological sense of that term, and consequently its tendency is to mislead the student as to the origin and character of the mental affection. Besides, some of these cases will be found in practice to belong more properly to the group characterized by maniacal exaltation, because this is their most obvious feature, and they furnish no proof of uterine affection. Hardly more fortunate is Delasiauve in the name he has bestowed on a large class of cases—pseudo-monomaniacs—which raises a doubt in the reader's mind whether M. D. considers them as really insane

or only so in appearance, and his own remarks, we regret to say, do not remove the doubt.

Much fault has been found with the name, *moral insanity*, and many worthy persons can scarcely hear it mentioned without being driven from their propriety. Why it should be so very unsatisfactory we could never understand, and are obliged to accept the fact as an illustration of the old couplet,

"I do not like thee, Dr. Fell,  
The reason why, I cannot tell."

Nobody denies that disease affects the mental faculties very unequally; that while the intellectual or reflective powers may be greatly disordered so as to produce delusions and false belief, the moral or affective powers present little change, all the patient's relations to others seeming to be marked by his usual sentiments; and that in many other cases, the opposite state of things may occur. It would seem to be a perfectly legitimate exercise of nomenclature to designate the different forms of insanity by the names of the faculties chiefly involved. This course has the merit of being immediately and universally intelligible, for the division of the mental powers into moral and intellectual has long been used and is familiar to the common understanding. Not one of the numerous substitutes offered for the name moral insanity is less liable to objection, but it would be hardly worth our while to expose their deficiencies, for they are obvious enough at sight. Nobody can suppose that the bench and bar would be more inclined to favour the plea of hysterical insanity, or maniacal exaltation, or pseudo-monomania, or malady of doubt, or delirium of the conduct. All they want is that the expert shall be able to say that the party is insane, and that the elements of his insanity are real and obvious, not concealed and supposititious. And we may reckon it as another result of this discussion that it elicited no name for the disease in question preferable to that by which it has been best known.

The subject is by no means exhausted, and we hope that our French brethren in this specialty, with their abounding zeal and their unrivalled opportunities, will continue to inquire and discuss.

I. R.

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ART. XXII.—*Diseases of the Chest; being Contributions to their Clinical History, Pathology, and Treatment.* By A. T. H. WATERS, M. D., etc. pp. 418. London: John Churchill & Sons, 1868.

DR. WATERS is favourably known in this country as the author of a prize essay on the Anatomy of the Lungs, and of a paper on Emphysema, both of which are republished in the volume before us. His description of the anatomy of the lungs is excellent. On some points, it is true, we find him at variance with the best authorities on this subject, but he always bases his assertions on numerous microscopic observations. For instance, Dr. Waters contends that the amount of cellular tissue in the lungs is exceedingly small, and describes the walls of the cells as formed of "yellow elastic fibrous tissue, a basement membrane, and an epithelium, together with the capillary vessels constituting the pulmonary



plexus. . . . The basement membrane is thin, homogeneous, and transparent." This differs, as we have said, from what has been written on this subject by other microscopists. In Kölliker's *Microscopical Anatomy* (Amer. ed., p. 579), however, we find the following description: "In the air cells I cannot admit the existence of more than two layers—a fibrous membrane and an epithelium; the former is manifestly the much attenuated mucous membrane and fibrous tunic of the bronchiæ, entirely deprived of the smooth muscles, and consisting of a homogeneous matrix of connective tissue, together with elastic fibres and numerous vessels."

Dr. Waters admits the presence of connective tissue in great abundance in the foetal lungs, but says that it is only demonstrable in the lung of an adult human being, surrounding the bronchial tubes and the larger bloodvessels, and connecting the various lobules with each other. We confess that we are not convinced by the arguments of Dr. Waters, that connective tissue exists to such a slight extent as he would have us believe; the diseases of the lungs sometimes furnish us with reason for thinking that it is more abundantly distributed through these organs. Dr. Waters is also very decided in his conviction that the pulmonary arteries are the vessels which nourish the air cells, as it has always been impossible for him to inject the bronchial arteries farther than the ultimate ramification of the bronchial tubes. The bronchial veins also, according to his observations, do not convey the blood of the bronchial arteries back to the heart, but arise solely from the structures at the root of the lung. The bronchial arteries, on the other hand, empty into the pulmonary veins, and are the nutrient vessels of the pleuræ; hence the fact, that pleurisy frequently occurs uncomplicated with pneumonia.

The air cells attached to the last division of the bronchial tubes constitute, according to Dr. Waters, a lobulette; and these cells are so arranged, as is well known, that they admit of the exposure of the blood on two surfaces to the air; and the capacity of the lungs for the aeration of the blood is still farther increased by the presence of alveoli in the air sacs and the ultimate ramifications of the tubes. The bloodvessels are distributed through the membranes which separate these alveoli, and in this way the extent of surface over which the blood is brought in contact with the air, is very much increased. The bloodvessels of the different lobulettes, Dr. Waters is inclined to think, do not anastomose; and he is certain that those of the lobules do not. All these points have been proved to the author's satisfaction by numerous experiments of injecting the different vessels of the lungs. Thus, if the bronchial artery be injected, the injecting material will pass into the pulmonary vein, and *vice versa*; if the pulmonary vein be tied, it will then pass back into the pulmonary artery through the pulmonary plexus. Dr. Waters admits that it seems unlikely that venous blood should enter the pulmonary vein, but is obliged to accept it as a fact in consequence of the results of numerous experiments.

Pneumonia is the subject of seven chapters, and is exceedingly well treated of by our author, who says that there still exists much discrepancy of opinion concerning some points connected with the morbid anatomy of the disease.

1. The bloodvessels involved in the inflammation.

2. The particular part of the pulmonary substance which is the seat of the disease.

In regard to the first point, Dr. Waters thinks that the pulmonary arteries are the vessels principally, if not solely, involved in the inflammation;

and this opinion is a legitimate consequence of the view which Dr. Waters entertains of the anatomy of the lung. In regard to the seat of the inflammation, Dr. Waters believes it to be the air sacs. If a piece of inflamed lung, he says, be examined microscopically, the cells will be found filled with solid matter, and sometimes moulds of the air cells can be produced by soaking the preparation in spirit. On the other hand, not believing in the existence of any true interstitial tissue, he rejects entirely the theory that the exudation takes place between the walls of the air cells. It is true, he says, these will often be found thickened, but this condition may be explained by the congestion of the bloodvessels. In the third stage, true pus corpuscles are believed to exist in very much less number than is generally supposed, the condition being not so much one of diffuse suppuration as of fatty degeneration; a view which Dr. Walshe claims to have enunciated in the first edition of his work on Diseases of the Chest, and which is the subject of an able and instructive paper by Dr. J. M. Da Costa (*Amer. Journ. Med. Sciences*, N. S., vol. xxx. p. 295), who found the proportion of oil present in the lung to rise from four to eighteen per cent.

The view that the exudation takes place into the interior of the air sacs is the only one generally entertained by the profession: and the fact that the expectoration corresponds in many of its characters with the exudation, certainly seems to lend support to it.

Dr. Waters agrees with Dr. Stokes in thinking that engorgement is not the earliest stage of pneumonia, but is preceded by the stage of arterial injection; the signs by which the latter is recognized are essentially those mentioned by Stokes. The details of two cases in which the stage of arterial injection was distinctly recognized, are given by our author; in both of these cases a loud, harsh, and peculiar respiratory murmur was audible over a portion of the lung, which next day furnished the crepitant râle. The histories of these cases are valuable, as, from the nature of the disease, opportunities either for confirming or contradicting the statement of Stokes are exceedingly rare. The explanation given of the mechanism of the crepitant râle is substantially that of Dr. Carr, of Canandaigua. This râle, Dr. Waters thinks, is by no means confined to pneumonia, but may frequently be heard in œdema of the lungs. Practically, this does not increase the difficulty of the diagnosis of pneumonia, for the other physical signs, and the general symptoms, will generally enable us to come to a correct conclusion.

The treatment recommended by Dr. Waters is very simple. He opens his remarks on this head by saying that the physician should always recollect that the patient, not the disease, is to be treated, and therefore that no plan of treatment will be found equally efficacious in all cases. As a general rule, bleeding, leeching, and even purging, are to be avoided, although the fact that relief to pain, and to some of the other symptoms, occasionally follows the employment of these remedies, is freely admitted. On the other hand, in some cases, presenting the symptoms of sthenic pneumonia, tartar emetic in doses of the sixteenth to the eighth of a grain frequently repeated during the day will often accomplish good. Even larger doses are occasionally necessary, and some cases are detailed where a change from a purely stimulant to the antimonial treatment was productive of benefit to the patient. In cases, however, where the disease assumes a low type, either from the character of the epidemic or from previous debility on the part of the patient, stimulus, together with beef-

tea, must be administered freely; and there is no better indication for the administration of stimulants than extreme frequency of pulse. The occurrence of delirium is rightly regarded as no contraindication to the use of alcohol, for this more frequently depends upon an altered condition of the blood than upon inflammation of the meninges. Other remedies are of course to be given to meet special indications—*e. g.*, opium, carbonate of ammonia, chloric ether, and the like. Rubefacients to the chest are recommended in the early stage, while later a blister is to be used.

The chapters on pneumonia finish with a table, containing the results of treatment in forty-four uncomplicated cases, among which we find but one death recorded; the ages of the patients treated ranging from six to fifty-five years. Treatment so simple as that here recommended, we are convinced from some experience, would not be followed by results so favourable in this country; but we must admit that Dr. Water's cases appear to be conscientiously reported.

A very large part of the book is devoted to the consideration of the subject of emphysema. The author says time has only served to confirm the opinions which he held at the time he published his paper on this subject. Two kinds of emphysema are believed to exist: 1, vesicular emphysema; 2, interlobular emphysema. Of the first kind there are three varieties: 1, partial lobular emphysema; 2, lobular emphysema; 3, lobar emphysema. The names of these different varieties carry with them, to some extent, the nature of the emphysema which they represent. The first variety is exceedingly infrequent, except as an accompaniment of the other two, and the third is decidedly the most important and the most frequent.

The interlobular form is generally a result of the lobar form. When this has advanced to a considerable degree, it can readily be understood from the arrangement of the areolar tissue at the root of the lung, how it is that subpleural emphysema and emphysema of the head and neck will be an occasional complication.

Emphysema Dr. Waters believes to be due to a degenerating process of the tissue of the lungs, and he bases this assumption, 1st, upon the high degree of development the disease often reaches without any previous history of violent or long-continued cough, either in connection with bronchitis, whooping-cough, or any similar affection 2d. The frequency with which the disease attacks the whole of both lungs, and the uniformly equal character of the morbid changes often observed throughout all parts of the lungs. 3d. The hereditary nature of the disease.<sup>1</sup> 4th. The manner in which the disease is influenced by certain remedial measures which are known to act beneficially on other diseases attended with degeneration of tissue. But, although fully a believer in the degeneration of tissue which takes place in some cases, Dr. Waters has not been able to discover its nature either by chemical or microscopical tests. He regards as not proven the theory of Mr. Rainey, that fatty degeneration exists, as this distinguished observer's deductions appear to have been made from experiments upon a single specimen of emphysema; and rejects also the theory of Mr. Jenner, that it is due to fibrous degeneration, the result of an exudation of lymph, as he has seen many cases in which

<sup>1</sup> An observation of Jackson is quoted to show that the disease is decidedly hereditary; thus of twenty-eight emphysematous patients, eighteen were born of parents affected with the same disease. On the other hand, of fifty people not affected with emphysema, only three had parents with emphysematous lungs.

there was not the slightest ground for supposing that any antecedent congestion had existed.

In the next chapter are discussed very ably the causes of the local forms of emphysema. The inspiratory theory, either as originally proposed by Laennec, or subsequently modified by Gairdner, is rejected *in toto*. Laennec's theory, as is well known, is based upon the greater force of the inspiratory than of the expiratory act, in consequence of which plugs of mucus are drawn down into the bronchi during the inspiration, which the subsequent expiration fails to dislodge, and which produce, as a necessary result, a distension of the air cells attached to the bronchus. Hutchinson has proved that the expiratory movement is as powerful as the inspiratory, and it is now well known that inspissated mucus is more likely to produce collapse than over distension of a portion of the lung, a fact which has been proved by the experiments of Traube and Mendelsohn, who pushed small hard bodies down the bronchial tubes of animals, and found that the air sacs connected with the obstructed bronchus became red and deprived of air. Gairdner, from the fact that emphysema, in one part of the lung, is often associated with collapse in another, has looked upon the association as effect and cause, the emphysema being due to a want of a proper support by the collapsed lobule to the emphysematous lobule. If this view were correct, the collapsed and emphysematous lobules should be in close proximity; but this is, as is well known, not the case, for while the former are generally found in the lower and posterior portion of the lung, the latter occupy the upper and anterior portion.

Having dismissed satisfactorily the inspiratory theory, our author proceeds to discuss the other. The arguments used by him in support of the latter are certainly forcible. He calls attention to the well-known fact that the parietes of the chest are weakest above the clavicles, and that during coughing, which may be regarded as a violent expiration, the infra-clavicular spaces may frequently be observed to be distended, and that their percussion will give a tympanitic sound. This distension he explains in the following way: "Violent expiratory efforts are chiefly made with the abdominal muscles, and the most powerful agents are the recti; the contraction of these muscles, forcing upwards the abdominal viscera and the diaphragm, produces the greatest amount of compression at the base of each lung; the air is consequently driven upwards in a strong current. There being no corresponding force acting at the upper part of the chest, on the apex of the lung, this latter is not emptied; on the contrary, it becomes forcibly distended by the upward current. Further, the strong currents of air from the central and basic portions of the lungs overcome those from the thin portions; and thus these latter, instead of being emptied, become, like the apex, forcibly distended."

The occurrence of emphysema after chronic bronchitis, pertussis, or any other disease of which coughing is a frequent symptom, is readily explained by the forced expirations; while there can be no doubt that long-continued inflammation, by causing a diminution in the nutrition of the air cells, leads to their more ready distension.

The symptoms of emphysema are the subject of the next chapter. In regard to the râle, called, by Laennec, *râle crépitant sec à grosses bulles*, Dr. Waters says that it is due to a collection of mucus in the bronchial tubes, and is therefore essentially a mucous râle. He does not, however,

mention the fact that the enlarged and prominent air cells will occasionally give rise to a grazing or friction sound.

Emphysema may prove fatal either in consequence of intercurrent bronchitis, with copious secretion, where the patient is too weak to get rid of the accumulation in the bronchial tubes, or from the tendency which exists in this disease to the formation of fibrinous clots in the heart and large vessels. Finally, Dr. Waters believes that there is no immunity enjoyed by the emphysematous from the deposition of tubercle on account of the so-called venosity of the blood; while the fact that emphysema may sometimes complicate tubercle is fully admitted by him.

The next two chapters are taken up with the consideration of œdema, gangrene, and apoplexy of the lung. These chapters, although well worth reading, contain nothing absolutely new. Dr. Waters insists that the effusion in œdema and apoplexy takes place into the air sacs, and not into an intra-vesicular structure.

A clinical lecture on pleurisy next follows. In this the following points are especially discussed: 1. The liability of the disease to be induced or followed by phthisis. 2. The necessary alteration of structure which it leaves behind, making its prognosis more unfavourable than that of pneumonia. 3. The artery involved in the inflammation, which Dr. Waters believes to be the bronchial, as this is the nutrient artery of the pleuræ. The treatment of this disease consists in the avoidance of depletory remedies and of mercury, and in the administration of tonics and stimulants. The external application of iodine is believed to be of much service in promoting the absorption of the effusion, although sometimes it has been known to produce a certain amount of feverishness. We are also cautioned against putting off the operation of *paracentesis thoracis* until too late.

Phthisis is treated of somewhat more in detail, most of the article on this subject being made up of extracts from clinical lectures. Dr. Waters abstains purposely from any discussion of the nature of tubercle, and therefore dwells particularly upon the causes, symptoms, prophylaxis, and treatment of the disease. The history and symptoms of this disease, he says, teach us that it is one which has its origin in impaired nutrition, and the local lesions are merely manifestations of this. Phthisis can be developed even in those not predisposed to it, by any cause which very much depresses the forces; hence its frequency in those who live in small alleys and ill-ventilated chambers. How potent a cause of phthisis this is, is shown by the mortality among animals confined in badly ventilated menageries. Cold is by no means so frequent a cause as is imagined by many, and to prove this Dr. Waters quotes some observations of Dr. Macrae on the Isle of Lewis, which has a cold, wet, and stormy climate, and yet in a population of 8500, furnished in three years but four deaths from phthisis; and of M. Lombard, who says that the low lands or the middle regions of the Alps, present a large number of phthisical persons. On the other hand the disease becomes more rare as we ascend the heights, so that above 1000 to 1200 metres only a few isolated cases are met with; and between 1200 and 1500 the disease disappears altogether. In this connection it may be well to point out the immunity which certain portions of our own country enjoy, where the mean range of the thermometer is low, as at St. Paul's, and on the shores of Lake Superior.

Our author is also of the number of those who regard phthisis as a

curable disease, but the patient is ever afterwards to regard himself as, to a certain extent, an unsound man—as one who is more than ever predisposed to phthisis, and should, therefore, no matter whether at home or abroad, be prepared to yield full obedience to all the laws of hygiene. Exercise in the open air, even in stormy weather, if he be well protected by woollen clothing, may be permitted; and cold bathing and sponging will often be found serviceable. A change of climate will sometimes be of advantage, and to avoid the long winters of England the patient may be sent to Australia, by way of the Cape of Good Hope. Severe labour, whether mental or physical, is to be avoided. The medicinal treatment of this disease consists in the administration of cod-liver oil, quinia, and iron. Where cod-liver oil nauseates, glycerine may be substituted. Iron will sometimes aggravate the symptoms, and its use should then be suspended. Cough-mixtures generally nauseate and destroy the appetite, and had therefore better be avoided. Mild counter-irritation, as that produced by the application of tincture of iodine, is often of service. Dr. Waters believes that the tubercles are deposited in the air sacs, but admits that they are sometimes found in the smaller bronchial tubes.

The second part of Dr. Waters' book comprises the diseases of the heart and thoracic aorta. Dr. Waters is disposed to think that the muscoli papillares do not close the auriculo-ventricular valves, as has been thought, but that their sole function is to prevent the valves being pushed back into the auricles—in fact, to hold them in such a way as to prevent regurgitation into the auricles; and he explains the closure of the valves by reference to the fact that they contain “a quantity of yellowish elastic fibres, which curl up, and thus draw the margins of the valve upwards, and inwards, towards the centre of the opening.” The explanation of the second sound is that generally given, *i. e.*, the vibration produced by the closure of the sigmoid valves. The first sound he believes, in like manner to be due to the closure of the auriculo-ventricular valves, thus excluding the impulse, the muscular contraction, the rush of blood through the narrowed orifices of the great arterial trunks, the collision of the particles of the blood among themselves and with the parietes of the heart, and the closure of the auriculo-ventricular valves, from any part in the causation of this sound. Dr. Waters does not consider that the impulse is of the nature of a blow, but that it “results from the ventricles in their contraction assuming a globular form, and consequently, pushing out the yielding intercostal spaces.” Besides which, we are perfectly familiar with the fact, that the first sound is heard distinctly if the stethoscope be placed directly on the exposed heart of an animal.

In relation to the muscular contraction of the heart, Dr. Waters asks why, if the contraction of the ventricles gives rise to sound, the contraction of the auricles should be noiseless? If to this question the answer be returned, that the auricle is a weak muscle compared with the ventricle, Dr. Waters replies that the auricle of an adult is of far greater power than the ventricle of a fœtus; and to prove his position he refers to some experiments of Dr. Halford. In these experiments, the veins leading to the heart being compressed there was no sound heard, although the muscular contraction continued; the pressure being removed, the sounds were again heard. It will be recollected that Rouanet, in his thesis, says, “The greater size, thickness, and extensibility of the membrane, render the sound duller, and the substance to which it is attached modifies the quality of the sound in proportion to its thickness, softness, and

elasticity ;" hence the difference which is perceptible between the first and second sound. The same view is supported by the experiment of Mr. Brakyn.

A few clinical remarks on pericarditis follow. Regarding, as Dr. Waters does, the adhesion of the opposite surfaces of the pericardium as the most favourable result that can occur in this disease, he deprecates its treatment by mercury, which he thinks has a tendency to diminish the plasticity of the blood and of the exudation. In the rheumatic form the alkalies should be given in large doses, and, in all cases, opium in pill form will be found a valuable remedy. Even in acute cases stimulus will be found useful. In the course of this lecture Dr. Waters gives an explanation of the dirotism of the pulse, which is found in all diseases of low type. This dirotism the sphygmograph has demonstrated to be present in a slight degree in health, and was believed by Marey to be due to an echo or reflux produced at the bifurcation of the aorta. While agreeing with Marey that the dirotism is due to a reflux, Dr. Waters believes this reflux to be produced by the closure of the sigmoid valves, and, of course, in conditions of system where the tension of the arteries is feeble, the dirotism will be most marked.

The next chapters contain some clinical remarks on the subject of fatty degeneration of the heart. Dr. Waters holds that this disease is more common than is generally supposed, especially in very obese persons, and explains its occurrence in them by their habits of inactivity, and by the cramping effects upon the muscles of the heart, which the fat deposited in its walls must have. The physical signs of fatty degeneration, it must be confessed, are very unsatisfactory; the most reliable, perhaps, being the diminution in the intensity of the first sound, and the diminished force of the impulse, together with a small and intermittent pulse. Among the general symptoms which indicate its presence are, the tendency which the heart manifests to be thrown into tumultuous action by the slightest cause, frequent sighing, a numbness in the fingers of the left hand, and the characteristic angina. Dr. Waters does not regard the presence of the arcus senilis as positive proof of the existence of fatty degeneration; nor, on the other hand, does its absence render the diagnosis impossible. It is only important as showing a tendency to fatty degeneration. Fatty degeneration may frequently be the cause of a fatal termination of an acute disease; but if the patient be careful, prolonged life is possible. The treatment should consist in the administration of iron and other tonics.

Next in order comes a clinical lecture on diseases of the valves, and the reports of cases contained in this lecture will be found to contain much valuable information. The existence of a valvular disease sufficient to cause a murmur, by no means produces incapacity for the performance of the ordinary duties of life. On the contrary, occupation, by calling the patient's attention away from himself, will often be found of positive service. As the greatest evil that can befall a patient with valvular disease is for his heart to become fatty, the greatest care should be exercised that the muscular structure of the heart be kept in a healthy condition. The rules given for the recognition of the different murmurs are excellent. The direct mitral murmur, we are told, occasionally occurs, but not nearly so frequently as constriction of this orifice. Dr. Waters is not disposed to think that the sphygmograph will prove to be a valuable aid in the diagnosis of cardiac disease, and the truth of this opinion our own expe-

rience confirms; for recently, in a well-marked case of aortic regurgitation, this instrument failed to give the characteristic trace, and with other lesions of the valves the tracings give us very little information in regard to the nature and seat of the lesion. We find Dr. Waters at variance with the generally received opinion that aortic insufficiency is the lesion which is most apt to cause sudden death. With Dr. Stokes, he thinks that it is mitral insufficiency. He also thinks that aortic disease is compatible with a long life; but mitral disease, by the secondary lesions which it entails, generally gives rise to an early death.

Eight cases of aneurism are next reported, and they furnish the occasion for some very happy remarks in regard to the diagnosis and treatment of this disease, although we could have wished that Dr. Waters had treated the subject more in detail, for there are few diseases of the chest which perplex the student more than this. He is not disposed to place much reliance upon the medicinal treatment of this disease, which should consist in an effort, first, to promote the deposition of fibrin in the sac; and secondly, to improve the nutrition of the arterial coats. To fulfil the first indication, nothing is more certain than rest, long continued; acetate of lead, iodide of potassium, etc., having failed in Dr. Waters' hands.

A notice of the chapters on Asphyxia (apnœa) has already appeared in this Journal, July, 1861, p. 268.

Appended is a chapter on the treatment of disease by alcohol.

We have thus passed in review Dr. Waters' admirable book, which we regard as a very valuable addition to the works on diseases of the chest. Many of the chapters being really clinical lectures, the subjects treated are presented to the student in the most attractive of all forms. In a few points we have found Dr. Waters to differ from those who are generally considered authorities on his subject, but for the most part there is little that any would find fault with, and much that all will commend.

J. H. H.

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ART. XXIII.—*The Morbid States of the Stomach and Duodenum and their Relations to the Diseases of other Organs.* By SAMUEL FENWICK, M. D. 8vo. pp. 394. London: John Churchill & Sons, 1868.

WHEN the alimentary canal was arbitrarily divided by an imperfect physiology into sections of misunderstood function, and the pylorus was made to constitute a rigid line of demarcation between stomach and bowel, digestion of food and formation of feces, the subject most interesting in special pathology, and most immediately important in therapeutics, was darkly obscured. Then came the great discoveries that different substances are prepared for the purposes of nutrition by different intestinal fluids, and that secretion and absorption occur simultaneously. To these was added a truer view of the function of mucous membranes, and a recognition of the powerful determining influence which epithelial structures have upon the conditions of health and disease. The more intelligent attempt, thus rendered possible, to connect morbid changes of the digestive canal with clinical phenomena, has been zealously pursued, and in the elaborate works of Budd, Handfield Jones, Chambers, Brinton, Habershon, Fox, and other investigators of equal ability and faithfulness, we have a mass of information



which has exercised an immediate and perceptible influence at once upon the treatment of local disorders of digestion and the therapeutics of general disease. But these writers, says Dr. Fenwick, have been chiefly occupied with viewing pathological states simply as altering the anatomical structure and impairing the efficiency of the stomach itself, and the object of the present work is to direct our attention to these states as influencing other portions of the system, modifying the progress of various maladies, and giving rise to changes in the texture and functions of distant parts. Impressed with the importance and significance of the contemporaneous affection of various organs in disease, he endeavoured to investigate microscopically the condition of all the principal structures in persons dying of different maladies. Traces of such attempt will be observed throughout the volume, but being unable to obtain sufficient materials for such an extended investigation, he was obliged to limit his observations to the digestive canal. No previous writer has so fully examined the minute pathological anatomy of the digestive organs.

In an *introduction* of forty-nine pages the author has given us a carefully condensed, but clear and valuable *résumé* of what is known concerning the physiology of digestion and the minute anatomy of the organs engaged in it. The views of Bidder and Schmidt are for the most part accepted and reaffirmed, particularly in regard to the pancreas and liver. To this account is added a concise discussion of all those subjects of necessity preliminary to the body of the work, including the eliminating powers of the stomach, *post-mortem* digestion of its coats, variations in the secretions of pepsin unattended by visible alteration in the secreting structure, and the best methods of examining vomited matters and the gastric gland elements. In relation to the nature of the acid in the gastric juice, the suggestion is made, that the conflicting statements of chemists upon this point can be reconciled only by supposing that the lactic, butyric, and other acids may be present from the decomposition of particles of retained food; and also that the gastric juice may contain a certain proportion of any acid which is present in salts admitting of ready decomposition, and with which the blood is charged at the time of digestion. This latter view assumes special plausibility and interest when considered with the investigations of H. Bence Jones, which revealed the variations in the free acid of the urine, and the complementary relations existing between the secretions of the stomach and kidneys.

As the functions of an organ may be imperfectly performed, even when its anatomical structure seems to be healthy, Dr. Fenwick thought it useful to ascertain the amount of pepsin contained in the gastric mucous membranes of persons dying from various diseases. The following plan was therefore adopted in a large number of cases. The stomach was emptied of its contents, and placed in strong spirit of wine for a few days. The membrane was then carefully scraped from the subjacent coats and its weight ascertained. One hundred and twenty grains were beaten up with one ounce and a half of distilled water, and allowed to stand in a warm room for twelve hours, the mixture being afterwards passed through a coarse filter. To one ounce of this fluid fifteen minims of hydrochloric acid were added, and in it was placed a cube of hard-boiled white of egg, the weight of which had been previously ascertained. The bottle was kept for twelve hours at a temperature of  $98^{\circ}$ , at the end of which time the albumen was removed, and was again carefully weighed. The loss, of course, indicated the activity of the pepsin to the action of which the

albumen had been subjected. To avoid the errors which might arise from the loss of mucous membrane through *post-mortem* digestion or decomposition, only such observations are quoted as were conducted upon unaltered stomachs during the colder months of the year. As the activity of digestion depends as much upon the acid as upon the pepsin, we unite with the regret expressed that there was no opportunity of testing the nature and amount of the free acid in the contents of these stomachs. It was accordingly necessary to adopt uniformly the amount of muriatic acid above mentioned, as a basis of investigation.

The power of the gastric mucous membrane to eliminate from the blood certain animal poisons and excrementitious substances, is strongly insisted upon by Dr. Fenwick, and his position sustained by many careful observations in cases of constitutional disease, as well as by reference to facts already familiar.

The subject of "*post-mortem* solution" receives a careful examination. During life, the mucous membrane is defended from the action of its own secretion by the mucus and epithelium which cover it. After death the epithelium is detached, and the membrane, in the majority of cases, is, to a greater or less degree, digested. It is necessary that the changes thus produced should be most carefully studied, if we would avoid confounding them with the alterations produced by disease, and it is impossible to distinguish between the two by the naked eye alone. Dr. Fenwick believes that in the majority of cases, the softening is due to *post-mortem* solution, but maintains with Carswell, Cruveilhier, Rokitsanski, and others, and in opposition to Dr. Budd, that the change may take place during life. Autopsies of the human body being usually made at a considerable time after death, observations were carefully conducted upon cattle which had been killed when ill with the plague. The gastric mucous membrane was found very red, thickened, and often extremely soft. In these cases there was no doubt as to the cause of the softening, for the animals had been slaughtered, and the stomach removed immediately.

There are three circumstances which seem chiefly to determine the amount of *post-mortem* digestion, viz., the heat of the weather, the nature of the contents of the stomach, and the condition of the gastric mucous membrane itself. In warm weather there are few bodies that do not, in some degree, present the peculiar alteration. It is therefore desirable to pursue investigations upon diseases of the stomach during the colder months. The solution is usually found to be considerable in persons killed suddenly, or who have died while digestion was going on; also where acidity after food has been a prominent symptom, as in many cases of phthisis. In instances of death from brain disease solution is of frequent occurrence, and may possibly be explained by reference to Bernard's discovery of increased secretion of gastric juice upon irritation of the par vagum.

The previous condition of the mucous membrane itself is, however, of even more importance, as was demonstrated by the following interesting experiment. Three pieces of human stomach were placed in an artificial digestive fluid. One of these was healthy; the second presented appearances of fatty degeneration and tubular destruction; in the third most of the tubes were replaced by fibrous tissue. After a few hours the first piece was reduced to a pulp, readily washed away by a gentle stream of water; the second was gelatinous, of a yellow colour, transparent, and

although softened, still firm; the third formed a black, opaque, gelatinous mass, quite unlike either of the others. Again, portions of the stomach of a healthy dog, and of the stomach of a healthy man, were tested in like manner, in connection with parts of diseased stomachs, with corresponding results. When the glandular structure is thickened by chronic inflammation the secretion of the gastric juice is diminished, and under the same circumstances the state of the tissue renders it less liable to be dissolved. We find, accordingly, that *the cases in which there is the greatest amount of morbid change are those which are least affected by post-mortem digestion.*

In examining the coats of the stomach with the microscope, Dr. Fenwick first hardened them in alcohol. The internal surface was viewed as an opaque object, by which method the condition of the duct-openings, and of the ridges surrounding them, could be noted readily. Sections were made in order to investigate the glands, with the inter- and sub-tubular structures.

In the examination of vomited matters, when a considerable amount of food was present, a few drops were carefully taken from the bottom of the vessel, and a little of a weak solution of iodine added in order to produce in any starch which might be present, a blue, and in any sarcinae a brown, colour. Where it was desirable to search for casts of the gastric tubules, or minute portions of the mucous membrane itself, the admixture of food was carefully avoided, and vomiting was induced by warm water or chamomile tea during a fast. No iodine was then added, lest confusion might arise from coagulated mucus. Examination in shallow cells was preferred, in order to avoid destructive pressure by the covering-glass upon the casts.

Passing now from the *Introduction* to the body of the work, we do not find a categorical statement and consideration of numerous named gastric diseases, but a careful record of observations upon several morbid states and minute lesions of texture in the stomach and duodenum; and then an examination into the occurrence of these in connection with constitutional maladies, and structural changes of other viscera.

The first section (Chap. II.) considers the subject of *acute gastritis*. Allusion is made to the discussions and confusion connected with this term. "Many of the older medical writers speak of it as of not unfrequent occurrence; some of the best morbid anatomists of modern times, on the contrary, have altogether doubted its existence, except as the result of irritant poisons. The former class appears to have comprised, under the head of acute gastritis, cases in which the appearances found after death were the effects of post-mortem solution, or of simple vascular congestion; the latter has refused to consider any change in the mucous membrane as the effect of disease, unless the alterations were such as accorded with its ideas of what acute inflammation ought to produce in such a tissue." Reasons why the post-mortem appearances should be slight in acute gastritis are then given, and the attempt is made, by a series of highly illustrative cases, to secure for the term an appropriate and more precise application. The instances recorded are those of persons attacked during the progress of renal disease, cardiac affections, and gout, with severe pain at the epigastrium, extreme tenderness upon pressure in the same region, urgent vomiting, thirst, and fever, followed by great depression of the vascular and nervous systems. In the matters vomited were found casts of the gastric tubules, and fragments of desqua-

mated epithelium. After death the tubules, under the microscope, were obscurely seen, on account of the granular matter effused upon and between them. Their cells were either broken up, or they seemed fused together into a mass with granular and fatty matters. In some cases blood was met with within and between the tubes, and was also intermixed with their cells. The subtubular spaces were loaded with granular matter and blood globules. Dr. Fenwick has never met with this group of symptoms and tissue changes except in persons suffering from the chronic disorders above mentioned, or from others similar to them. The cases are such as must have occurred to every experienced physician, and after a careful review of the symptoms, the determination of their true nature rests, in great measure, upon the microscopic appearances. These are sufficiently decisive, and we are accordingly prepared to accept the author's conclusion: "Generally they are looked upon as the results of nervous irritation; I view them as indications of secondary disease affecting the mucous membranes, just as we see the serous membranes take on inflammatory action in the course of various other maladies. From the former point of view they are regarded as an accompaniment of the general exhaustion; from the latter, as the cause of a sudden depression of power, under which the patient sinks." In its direct bearing upon the treatment of the case the question is scarcely less important than the analogous inquiry concerning the presence or absence of cerebral inflammation in instances of fever accompanied by grave disturbance of the nervous functions. It is very satisfactory to have some just and definite standard of reference as to the existence or non-existence of a condition, the idea of which was at one time made the basis of a pernicious and widely accepted mass of pathological and therapeutical theory, and in the consequent reaction was, with equal injustice, almost entirely ignored.

Chapter III. is devoted to the subject of *subacute gastritis*, including those conditions usually known as "gastric catarrhs" and "bilious attacks." These are divided into three classes, all characterized by the discharge of much tenacious mucus (*containing only mucus corpuscles and not casts*), by violent vomiting, by their tendency to subside gradually without treatment, by the short duration of their more urgent symptoms, and by their liability to frequent recurrence. In the *first* variety the irritation is primarily of the stomach, and there is no evidence that the biliary organs are involved. In the *second*, the gastric derangement is regarded as originating from an affection of the liver. A tendency is more frequently inherited to these attacks than to any other form of dyspepsia. Dr. Fenwick thinks that persons who afterwards suffer with phthisis are peculiarly liable to such catarrhal paroxysms, and regards them, moreover, as "efforts of nature" to relieve the system of effete materials accumulated in the blood from the imperfect action of some of the eliminating organs. The third variety of "bilious attacks" is referred to fermentation of food, essentially connected with *weak* digestion and undue retention of ingesta. The matters vomited are often of a singular green hue, and in addition to torulæ, sarcinæ, and other growths, contain innumerable sporules of indeterminate character.

An investigation into the condition of the stomach, in fevers, constitutes Chapter IV. The symptoms which attend the origin and progress of the eruptive fevers are sufficient to give rise to the suspicion that the mucous membranes of the digestive tract may be as generally affected as the skin. The recent cattle plague afforded an admirable opportunity

for studying these structures, since the parts could be examined immediately after death, and all post-mortem solution thus avoided. Moreover, the observations could not be vitiated by the effects of medicines, or any pre-existing changes of structure. The degree of alteration was found to be in strict proportion to the intensity and duration of the disorder. Where the animals had been slaughtered within a few hours of the commencement of the attack, there was simply great congestion, with stripping off of the conical epithelium, which covers, in health, the upper ends of the gastric tubes. In place of this epithelium there was an exudation of granular matter. A little later, the round cells were also affected. They seemed to have been loosened from the basement membrane, and were irregularly scattered through the whole length of the tubes, as though in process of expulsion; whilst between them there was a deposit of granular material, showing that the inflammation had now reached the lower ends of the tubes. Where death had been deferred until the second or third day, all the normal gastric cells had disappeared, and the tubes contained only granular matter, with a few, thin, flat, and very transparent cells. The tubes were no longer easily separable, but were found closely united, and cells and nuclei could be observed between them. Ulcerations were noted upon the surface of the membrane, and changes similar to those just described existed in the intestine.

These interesting results prepare us for the succeeding observations upon the human stomach in cases of scarlatina, from which the following conclusions appear legitimately drawn: *In scarlatina the mucous membrane of the stomach and bowels is inflamed.* This inflammation varies greatly in degree in different persons, in different epidemics, and at different ages. Its severity is not necessarily in proportion to that of the inflammation in the skin and throat. The appearances presented by the minute lesions of texture are similar in their general character to those already recorded; but the tubes are much more distended, and remain so as late as the third week, or even later. *Desquamation of the epithelium of the stomach and intestines takes place in scarlatina.* This view is supported by the examination of the contents of the stomach, and the presence of tube-casts in the fluids vomited. *The condition of the skin is similar to that of the mucous membrane of the stomach in scarlatina.*

These changes are referred to the mucous membrane as an eliminator of the animal poison; gastro-enteritis immediately resulting. Serious effects often remain even in those who recover. Every practitioner must have seen persons who, although cured of the primary disorder, had received an injury to the digestive organs which neither time nor treatment is able to repair. The process of elimination in scarlatina differs from that in cattle-plague, inasmuch as in the former the gastric tubes continue loaded with granular matters for some time after the cessation of the fever. Dr. Fenwick thinks it probable, therefore, that the poison is first deposited in the outer and inner surfaces of the body, and afterward only gradually removed from the system. This removal, he thinks, is effected by reabsorption of the granular matter, and its subsequent elimination through the kidneys. Hence the albuminuria usually occurring in the second or third week. The poison in its passage produces the renal irritation and inflammation; but the process in the main looks directly toward restoration, and is best treated, according to Dr. Dickinson's suggestion, by the free internal use of water, and the avoidance of improper food. Without stopping to discuss the general correctness of

this view, we cannot omit an expression of our belief that the author has failed to attach sufficient importance to the coincident inflammation of the kidney.

There was not found, as might have been expected, any deficiency in the amount of the characteristic secretion of the stomach in the cases of scarlatina examined. The average amount of albumen dissolved in the process before detailed was, to the amount dissolved in health, as  $3\frac{1}{2}$  to 4. We must therefore refer the impaired functional activity of the stomach to the inability of the tubes, blocked up with cells and granular matters, to discharge the gastric juice, just as the obstructed ducts of the sweat glands long impede the escape of perspiration. There are no conclusive observations upon the absorbent power of the mucous membrane, but from the microscopic appearances of the villi it seems to be very seriously impaired. The injury inflicted upon the pancreas and other accessory organs is not clearly defined, but is evidently great, and aids in explaining those cases where weak digestion endures for a long time subsequent to the attack.

The demonstration of these changes in so many of the epithelial structures of the body, under the influence of scarlatina poison, gives us at once a more just and comprehensive idea of the disease. The eminent physician who was in the habit of calling his patients so many "mucous membranes," might well defend the expression as more true than facetious. "It is surely no exaggeration; for in very few indeed of the cases ministered to by us, has not either the cause of the death acted on the body through these integumentary (epithelial) coverings, or manifested its action by a perversion of their functions. A great majority of our drugs are intended to act on mucous membrane, or are introduced into the body through it. We cannot therefore but be grateful to those who have endeavoured to add to our knowledge of its nature and habits."<sup>1</sup>

In the only fatal case of *measles* recorded there appeared to be the same widely distributed changes; that in the digestive tube being analogous to such as are observed in the mucous membrane of the skin and respiratory passages.

In *typhoid fever* there is little evidence of anything like inflammatory action. Two dissections out of nine exhibited much granular, but apparently non-inflammatory, matter in the tubes. It was mingled with an unusual amount of oil, and seemed to be the result of disintegration of cells that were active when the patients were attacked. The change was in some sense atrophic, since the carefully scraped mucous membrane in four cases had an average weight of only 580 grains, to be contrasted with the average of 1035 grains in seventeen patients who had died of other complaints (excluding cancer). The functional activity was correspondingly impaired, as appeared from appropriate experiments, tried in seven cases. In three of these the albumen was not affected, but had rather gained in weight by absorption of fluid; in two, a small quantity was dissolved; in the remaining two, an ordinary amount of digestive power was observed. The average loss of weight of the albumen was one grain; to be contrasted with the average nearer health, four grains. Of the two cases in which a normal amount of digestive power was present, one died from intestinal perforation during probable convalescence, and the other was of uncertain diagnosis. These facts are

<sup>1</sup> Lectures, chiefly clinical.—Thomas King Chambers.

highly interesting and significant. In typhoid fever there would appear to be a *deficiency of cell formation*; in scarlatina and allied disorders that peculiar derangement of action in the germinal matter of the epithelium which results in the *rapid production of imperfectly developed, and variously altered, cells*. In the former disease there are doubtless more visible changes in portions of the lymphatic system.

The changes in the absorbent power of the mucous membrane it is difficult, if not impossible, to ascertain. Some information concerning them would aid even more directly in deciding upon proper remedies, and the most useful modes of administering them.

No microscopic examinations of the alimentary canal in cases of *variola* are recorded, but there seems little doubt that the stomach and intestines generally present signs of inflammation. Cases are mentioned by Dr. Fox in which the gastric tubes were found greatly altered in their structure. Gastro-enteritis is alluded to by Andral and Murchison as occurring in this disease.

This section of the book closes with some general conclusions respecting the action of the digestive canal as an eliminator in fevers, including pyæmia, erysipelas, and diphtheria.

In the next chapter, the changes occurring in *chronic gastritis* are carefully described as analyzed by the microscope into chronic *intertubular* and chronic *tubular* gastritis. The varieties of the condition, their connection with the production of mucus, their symptoms, causes, and treatment, are fully considered.

The inquiry into the condition of the stomach in diseases of the heart is faithfully pursued, and leads us to some very significant facts, of great importance in their bearing upon the treatment of cardiac affections. Cases where the aorta alone was involved, presented nothing specially abnormal; but whenever the balance of the circulation was destroyed by such pathological alterations of the valves or walls of the heart as result in a full right auricle and venous congestion, the gastro-enteric mucous membrane (and sometimes even that of the œsophagus) was found of a "dark and almost purple colour." The surface of the membrane was covered by a layer of firmly adherent mucus, the bloodvessels enlarged, and their coats thickened, the inter and sub-tubular spaces occupied by granular matter, cells and nuclei, while the epithelial linings were variously altered. The whole membrane (of the stomach) *was increased in weight one-fifth*, and its *digestive efficiency impaired more than one-fourth*. This group of facts scarcely needs comment. They furnish a ready explanation of those sensations of epigastric and abdominal distress and heaviness which constantly attend the sufferer from heart disease, and which, added to the abiding and inexpressible feeling of central weakness, cripple his activity and make his life an hourly struggle. They teach us, too, that remedial measures are loudly demanded, which shall directly or indirectly tend to keep all the intestinal capillaries free from distension, and this long before the dropsical symptoms mark the beginning of the end, and while the condition is usually regarded as one of discomfort rather than of suffering. The amount of food has an immediate and intimate connection with the state of the circulation, and patients with venous hearts should never allow themselves to eat at any one time, so much as can be partaken of with impunity by those in health. We are also led to question the propriety of the manner in which stimulants are now commonly employed to

relieve the paroxysmal conditions consequent upon a venous heart. Prompt capillary depletion is, on the contrary, clearly indicated.

Much space is devoted to specific details of the changes of the stomach in diseases of the liver and kidneys. They are closely connected with those occurring during disease of the heart, and bear directly upon the selection of remedies. The alterations observed in the diabetic stomach do not throw new light upon that frequently discussed disorder: nor are the accompanying conclusions, concerning the condition of the pancreas with diabetes satisfactory.

The relations of morbid changes in the stomach, duodenum, and intestinal villi to the production of tubercle and carcinoma, are discussed by Dr. Fenwick at great length. We recognize in his recorded microscopic observations much information, certainly of value, but as yet of indeterminate pathological application; and he seems to us to have more than once erred in attempting to establish between conditions merely coincident the more intimate relation of cause and effect. That the gastro-enteric mucous membrane is extensively altered both in tuberculosis and cancer is clearly demonstrated. These alterations do not, however, appear to be *peculiar*, but very *various*. In the present exaggerated confusion of ideas and theories concerning the nature and causes of tubercle, and the conflicting views as to the origin of cancer, we decline any remarks upon the subject *in extenso*, and merely express our dissent from the author's conclusion that the "chief cause of the production of tubercle is an activity of growth in the tissues disproportioned to the amount of healthy nutriment presented to them;" and that "cancer arises from something allied to an animal poison," and "*requires for its development* a rapid and contemporaneous degeneration of many of the tissues of the body." It is here that our author appears to mistake results of a common cause for a complete series of cause and effect. The special formative and conservative power normally belonging to the germinal matter of every tissue, is an essential element in the case, and no true conclusions as to pathological growths can be reached where its variations are ignored. Nor can the *constitutional tendency* to such *local* variations of development be more safely lost sight of.

*Cancer of the stomach, ulcer of the stomach, weak digestion, nervous dyspepsia*, and *gastric dilatation*, receive full notice under their appropriate heads; and in an appendix of thirty pages we have a statistical inquiry into the causes of dyspepsia. Thirty-two tables are accompanied by elaborate analytical comments, and present very much material for study.

The semeiology and treatment of diseases of the stomach are suitably stated throughout the volume, but as a hand-book of special therapeutics it is inferior to works which have recently preceded it. The author's object, as already stated, was of a different character, and his labour has been faithfully and successfully performed. Where he has not completed the inquiry he has indicated the manner in which it must be pursued.

Ten plates, by West, secure the text, occasionally too diffuse, from any possible obscurity, and make the volume a handsome addition to our works on special pathology.

E. R.



## ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*Die Krankhaften Geschwülste*. Dreissig Vorlesungen, etc. Von RUDOLF VIRCHOW, etc. etc. III. Band, 1 Hälfte. pp. 496. Berlin: Hirschwald, 1867.

*Morbid Tumours*. Thirty Lectures, etc. By RUDOLF VIRCHOW, etc. etc. Volume 3d, Part 1st. Berlin, 1867.

IN the number of this Journal for July last will be found a notice of the second volume of this work. The third volume, the first part of which only is as yet published, commences with an exceedingly interesting lecture, on the *strumas*. In no portion of the work have the distinguished Professor's powers of analysis and deduction been more clearly shown than in this lecture, and nowhere is the style more clear and forcible.

The word "struma" was at one time applied to every possible swelling around the neck; then it became limited to the enlargements of the thyroid gland, without regard to their nature. The author limits the term to *goitre*, and to those tumours of other organs which have an analogous development. Some have endeavoured to establish a certain variety of species, as lymphatic, cystic, and osseous struma, but this is an error. These various species are but different stages of development of the same identical formation, and hence it happens that they may all be found in the same tumour. The name struma lymphatica was given because the substance found in the gland was supposed to be an exudation of plastic lymph, which is not so. It partakes more of a colloid character, having a glaucous, sticky feeling, and to the naked eye presenting small gelatinous corpuscles, but under the microscope, an amorphous and homogeneous, or a granular aspect; hence the term colloid struma, or struma gelatinosa has been applied. But this gelatinous substance is not a necessary proof of goitre. It may exist as an infiltration of the gland without producing the slightest enlargement.

The gland is made of lobes separated from each other by septa of connective tissue; these lobes again are divided into lobules, and these last into the follicles which are the ultimate divisions. All these septa are provided with vessels which anastomose freely, and form a complete plexus around the ultimate follicles. The individual lobules are to be regarded as a system of anastomosing outgrowths from the follicles, rather than as aggregations of separate vesicles. Every follicle has a basement membrane, outside of which lies the connective tissue with the vascular system, and within which may be found a greater or less number of round nucleated cells. When the follicles undergo enlargement, these cells increase in number, and then the cystoid outgrowths become developed into cavities filled with a viscous fluid, in which crystals of oxalate of lime are often found. Soon after, the existence of gelatinous formation is shown by the presence of the homogeneous granules. This colloid formation has been regarded by some as an exudation, by others as a metamorphosis of cells, but the author regards it as the result of a process going on in the cells, modified by chemical action, and the granules are rather to be regarded as concretions. Though this colloid condition, as has been stated, does not necessarily constitute goitre, still it is always a prominent characteristic of it.

To constitute goitre it is necessary that the mass of the previous follicular formation should be increased; it is not merely an enlargement of the follicles, but an increase of their cystic appendages, an hypertrophy or hyperplasy. This increase of development may occur symmetrically throughout the entire substance of the gland, or it may be limited to individual portions, but the former condition is rare. The shape of the tumour, therefore, is no criterion of its

nature. If the development is throughout the whole substance of the gland, the tumour will be comparatively smooth, otherwise it will be more uneven and lobular. The new developments have all the characteristics of the original gland, and hence we find all the original elements of the gland enlarged, *i. e.*, the follicles, the connective tissue, and the bloodvessels, and hence we distinguish three varieties of hyperplastic struma, according as one or the other of these elements are principally developed, *viz.*, the follicular, the fibrous, and the vascular forms. In the first form, *struma follicularis mollis*, the follicles are so numerous that the tissue has, in recent cases, an exceedingly soft, almost fluctuating consistency. It is never extended over the whole gland, but limited to individual lobules. This condition is never found in a goitre of long standing. In the second form, *struma fibrosa*, the connective tissue even in the coarser divisions, is much harder, the number of follicles is smaller, the follicles themselves less developed, and the intervening tissue always firmer. This is not an originally different form, but it is the result of inflammatory action, a secondary change in a goitre already existing. It is only found in old and chronic cases, and corresponds to induration in other parts. This form is remarkably nodular, and the entire gland is seldom involved. The third or vascular form often acquires a special importance, and, under some circumstances, a development such as to modify the entire condition of the struma. The excessive vascularity of the gland is well known. Mayer estimates the amount of blood in the thyroid gland to be nearly equal to that in the forearm. The arteries, as well as the veins, anastomose freely upon the surface of the gland. The author recognizes two varieties of vascular goitre according as the veins or the arteries are most developed. The *struma aneurismatica* is of a much higher pathological importance than the *struma varicosa*. The latter is much the more frequent, and is a common complication of the follicular struma. In addition to these two varieties of the vascular goitre, there is the amyloid form. As in other organs, so also in the thyroid gland, the disease proceeds from the smaller vessels. In one instance of this kind the author found a condition of amyloid induration very similar to the same process described in the second volume of his work in connection with hyperplasia of the lymph glands.

As to the farther development of *struma hyperplastica*, there is from the commencement a perceptible difference to be observed. In some cases the tendency to the deposition of the gelatinous granules is strongly marked. If this is not the case there may ensue a fatty metamorphosis with absorption, or the amyloid induration, or the formation of cysts. Where gelatinous granules are abundant we have the *struma gelatinosa*.

This form produces the large and symmetrical tumours of the thyroid gland, in which the surface appears smooth and shining or the original depressions and lobes are only more strongly marked. On examination externally it feels firm and oftentimes somewhat doughy. A section of a well-developed tumour of this kind reveals a great number of smaller and larger spaces filled with a yellowish, sticky substance. The original structure of the gland, as has been above remarked, is repeated; we have lobes, lobules, and follicles. The more abundantly this gelatinous substance is deposited in the follicles, the more severely does the connective tissue suffer from the external pressure, the vessels become compressed and gradually vanish, the intervening tissue becomes thinner and thinner, and finally may disappear, thus uniting cavities hitherto separate. In this manner cysts are developed. Sooner or later the gelatinous substance undergoes a degeneration into a viscous albuminous fluid, which may be variously coloured in consequence of hemorrhage into the cavity, while the cells undergo the fatty metamorphosis, and at last are transformed into granular globules. Thus a cystic tumour may be developed out of one originally solid. If the development of the struma has been chiefly by lobules, we may have a whole series of different conditions in the same tumour; thus in one part recent follicular hyperplasia, in another the gelatinous formations, in another cystic, in another hemorrhagic, and in another induration. After long continuance the tumour may be transformed into one cyst.

As to the prognosis, the struma may undergo absorption either of itself or by the use of medicaments; the latter is true only in recent follicular cases.

Of all artificial agents the external and internal use of iodine has given the best results. The application of unguent. iodidi is of service in some cases, and perhaps as much credit is due to the friction as to the drug itself.

The struma is evidently a result of an active irritative process. A simple inflammation of the thyroid gland does not constitute a struma; the latter is rather a chronic interstitial inflammation. In itself the goitre is comparatively innocent, and in those countries where it is most at home, physicians state that the chief cause of anxiety is from the pressure it must exert upon the surrounding parts. As a result of this pressure we may have disturbances in the circulatory system from pressure upon the jugular veins, and the carotid arteries; in the nervous system from pressure upon the vagus, the sympathetic, and the brachial systems; in the organs of deglutition from pressure upon the oesophagus, and in the respiratory organs from pressure upon the trachea. The most dangerous of all is that form where the enlargement takes place downwards beneath the sternum, thus compressing the trachea backwards against the vertebræ; in this form the most terrible symptoms may supervene, while there is no apparent sign of any enlargement, and thus the true clue to the explanation of the symptoms is lost. There is still another source of danger, and that is from the formation of an abscess in the cyst, and a perforation of the trachea. This may be favoured if, by long-continued pressure against the vertebræ, the walls of the tube have undergone a fatty metamorphosis, and become softened. Such a termination is more common in those cases where a sarcoma or a cancer has been developed in an already existing goitre. And here it is a cancerous degeneration, taking place interstitially. True cancer of the thyroid gland, whether by infection or metastasis, is one of the greatest rarities.

In regard to the etiology of goitre, our author recognizes certain predisposing elements. Women are more subject to them than men. Goitres commence to be developed generally in early life; indeed, they are not unfrequently congenital. Whether or not the disease is hereditary is difficult to determine, because it is uncertain how much influence is due to locality, and how much to causes affecting foetal life. In some instances the latter seems to be the case. Parents have had children born with goitres in one locality, and then, having changed their residence, their subsequent children have been free from the disease. Cases of hereditary sporadic goitre have been rarely noticed. The consideration of the determining causes leads at once to the consideration of endemic goitre, and of local peculiarities. From the author's observation he is led to attribute the disease to the qualities of the drinking water, and these are specially determined by the geological character of the soil from which the springs flow. It is not as yet, however, possible to ascribe the power of producing goitre to any single constituent in the water. In southern France, and in those parts of England where this disease is dominant, an excess of lime and magnesia is found in the water; but it is not by these alone that the effect is produced. The author thinks that, in connection with these, there must be something of the nature of a miasma existing in the air and in the water, and in the vapor of water which is taken into the body. This derives some confirmation from the fact, that not merely men and animals born in these regions are subject to goitre, but that emigrants and others living for a longer or shorter time in these regions acquire the disease, which will again vanish if these persons return sufficiently early to their previous abodes. This acquired goitre is a sufficiently positive proof of endemic origin. It is still more difficult to assign a cause to the existence of sporadic cases of goitre; the author has recourse to the existence of special predispositions, to original anomalous formations as a means of explanation.

The complications of goitre with other diseases offer questions almost as difficult of solution as its etiology. The idea of a scrofulous origin and identity has been aided by the wrong application of the word struma. Scrofulous diseases abound in large cities; the goitre is found in the country. Tuberculosis may exist in the most marked degree in connection with it, thus showing the falsity of the idea that the goitre was a sort of safety-valve against consumption. The most important complication of struma is that of cretinism. By

this name is understood the entire group of disturbances manifested in certain localities, which have their origin very early in foetal life, and which, accompanied by a deficient cerebral development, and by a consequent idiotic condition, are wont to produce more or less marked anomalies in the development of the whole body—an alteration in the entire organization. It is a fact that the real endemic cretinism is only found in goitre regions; as yet we know no portion of the globe where cretinism exists as an endemic, in which goitre does not also exist to a marked degree; the converse, however, does not hold good. Nor is there any fixed relation between the size of the goitre and the degree of those disturbances which go to make up cretinism. The most fully developed cretins may have very small goitres, and now and then none visible; and, on the other hand, individuals with the largest goitres may possess the most perfect intelligence. But this latter fact becomes of no significance when we consider the etiology of cretinism; the point to be regarded is the period of development. The author has no doubt that cretinism is established, so to speak, in the period of intra-uterine life; that the departure from the norm occurs even in the earliest months of pregnancy. If a family which hitherto had healthy children, migrates into a cretin region, and thereafter the subsequent children are cretins, while the parents and the previous children have not been, the conclusion is forced upon us that the influences which have resulted in the cretinism of the subsequent children must have exerted their effect in the earliest period of embryonal development. But if the parents, and the children born earlier in the new region, have only goitres, while the subsequent children are cretins, then is it probable that the struma and cretinism are produced by the same influences. If the former, therefore, result from miasmatic substances introduced by fluids into the body, the latter, most probably, is attributable to the same source. The only cure for cretinism is an improvement of the territorial conditions. For actual cretins it is care and attendance, and not medicine that is needed. And in conclusion the author reiterates statements made fifteen years ago, that in places where cretinism exists as united with certain local conditions, there goitre also exists; that cretinism always occupies the centre of the goitre locality, diminishing towards the periphery, while the goitre exists alike in the centre and on the periphery in undiminished force.

Another remarkable combination of the goitre is that with irritability of the heart, and protrusion of the eyeballs, known as Graves' or Basedow's disease. The questionable propriety of attaching any individual's name to a disease is nowhere more apparent than in the case before us. Flajani published in Rome, in 1802, an account of three cases, where goitre was associated with palpitation of the heart. Percy, in England, in 1825, quoted by Stokes, was the first to add the third symptom, of the protrusion of the eyes. Although Graves published his observations in 1835, yet to Von Basedow is due the credit of giving, in 1840, the most perfect history of the disease, and of conducting the most to exact knowledge of it. Tronssseau always spoke of the disease as Graves' disease, but our author claims that he was wrong in so doing, as Graves held the goitre and the palpitation of the heart as symptoms of hysteria, and only casually mentions the condition of the eyes; nor indeed, as has been shown, was he the first to notice the entire complication of symptoms.

The condition of the thyroid gland in this disease is very variable. The swelling is generally not so large as an ordinary goitre. The most prominent symptom is a more marked development of the vessels, rendering perceptible a diastolic impulse and murmur; hence it has been termed *struma aneurysmatica*. A sudden enlargement and rapid diminution of the size of the tumour are united with it. The results of anatomical investigation show that it is no special variety of goitre, nor a certain size or stage of its existence, that gives rise to the phenomena. The gland passes through a series of successive stages in its enlargement, such as we have seen in the goitre; and hence, *à priori*, it is probable that this symptom must be considered as a secondary phenomenon. From clinical observation, however, we are led to suspect that the continued dilatation of the vessels, especially of the veins, must play an important part. The heart, in almost all cases, has been enlarged, generally with dilatation, even where the valves are healthy; this is most marked in the left ventricle.

The aorta and the larger vessels were in many cases atheromatous. The hypertrophy of the heart seems clinically to belong to a later period; increased action (160 beats and upwards to the minute) is the most common symptom. The prominence of the eyes depends upon an alteration of the fatty tissue of the orbit. This is sometimes hypertrophied, but more commonly it is expanded by a hyperæmic swelling, easily compressible in the earlier stages, and vanishing at death.

This triad of symptoms, the disease of the heart, of the thyroid gland, and of the orbital cushion, exists as a rule even though they are not always constant elements, and the question arises, What is the relation between them? The disease of the gland cannot be the fundamental cause, as, according to some observers, it may be entirely wanting. Still less can the affection of the orbital cushion be regarded as the principal disease, as the protrusion of the eyes may be entirely absent, or may be developed at a later period. Nor can we say that the hypertrophy of the heart is the prime cause. For, on the one hand, the hypertrophy does not always exist, and on the other, hypertrophy of the heart is observed often enough, without the prominence of the eyes and without goitre. The anatomical alterations of any and of all of these parts cannot therefore be the determining cause. Hence, we are left to the consideration of the functional disturbances. Even in the treatment of simple goitre by iodine a most noticeable acceleration of the pulse, accompanied, too, by palpitation of the heart, has been observed in some cases, but here the protrusion of the eyes is wanting. According to the ideas of the humoralists wherever different organs are affected, without an apparent dependence of the one upon the other, the conclusion is drawn, that an alteration of the blood must be the cause of the various symptoms, and, consequently, the symptoms of the disease now under consideration have been ascribed to anæmia. In support of this view there was not merely the frequent occurrence of vascular impulse, palpitations, and murmurs in the vessels among chlorotic patients, not merely the fact that the majority of cases of the disease occurred among women, and that frequently pregnancy and parturition exerted a very marked and favourable influence upon the course of the disease, but also, and especially, the experience that a tonic treatment had produced most fortunate results. But anæmia alone is not a sufficient cause; an effect must be produced by it upon the nervous system, and hence Graves regarded the condition of the nervous system as hysterical. Stokes supposed that there was originally a functional disturbance of the heart followed by the organic changes. Others have sought an explanation in alterations of the sympathetic nerve. As yet there are not enough observations collected to warrant a conclusion. At all events the author thinks it is not from anatomical investigations that we can expect light, as the question does not depend upon the final conditions revealed by a post-mortem, but rather upon the first departures from a normal condition.

With regard to the etiology of this disease we can say but little. It is not a disease peculiar to a goitre region; on the contrary, struma exophthalmica is one of the most marked varieties of sporadic goitre. The great majority of cases are in women, and especially in earlier years, at the time of puberty and in childbed. Still uterine disturbances can by no means be regarded as always affording a predisposing cause. Other diseases have been supposed to induce this, as *e. g.*, typhus, *taking cold*, especially in the neck, and chlorosis. The latter, the author regards as a disease pertaining to development, and hence, with this view, carries back the struma exophthalmica to an original predisposition. Still less do we know of the cause of the disease as it appears in men. It occurs in them, according to von Gräfe, later in life, and with greater severity. It is remarkable that not unfrequently the disease has shown itself very suddenly, as after severe labour or after a fright.

Death is ushered in by an exacerbation of all the symptoms; sometimes suddenly with great anguish and disturbances of the brain, sometimes more gradually with diminished nutrition and powers, and hastened by copious and sometimes bloody diarrhoea, and by pulmonary blennorrhœa. On the other hand, a perfect recovery sometimes takes place, especially in recent cases, although the goitre may not entirely disappear. Sometimes iron and again digitalis have

proved serviceable; iodine is of no use: the best results have been obtained by the cold water treatment, sea baths, and an invigorating diet.

To return to the subject of goitre, it is evident, from all that has been said, that an opinion upon the nature and significance of goitre in individual cases will be subject to much variation. Under all circumstances this much will be admitted, that goitre in itself is a local disease, which does not pass beyond the limits of the thyroid gland, which does not affect either by contiguity or by metastasis heterologous tissues. In cases, therefore, where medical treatment has availed and can avail nothing, and where threatening paroxysms are produced by the goitre, especially by the aneurysmatic and cystic goitre, there can be no doubt of the propriety of resorting to an operation. The surgical treatment is very old and embraces operations from the ligation of the arteries to the entire extirpation of the gland. In modern times, however, surgical interference is wisely limited to a simple puncture or incision. The former has gained reputation since Velpeau introduced the injection of iodine, and it has afforded good results. Where, however, the cyst-wall is very thick the operation by incision is preferable, and this is most useful when accompanied by the excision of a portion of the wall itself. Still better is the application of the galvano-caustic, by means of which the cyst may be merely opened or a portion of the struma removed.

Having considered those tumours which were allied to the connective tissue and to the sympathetic structures, the author next turns to the consideration of such as contain tissues of a higher development, tissues which specifically belong to animal life. Of these there are three forms, viz., those which consist chiefly of muscular elements, nerve elements, and bloodvessels.

The next lecture, the twenty-third, is devoted to the consideration of the first of these three forms, which are denominated *Myoma*, or fleshy tumours. These tumours are chiefly found in the involuntary muscles, and rarely ever in those of animal life. In almost all points where the smooth muscular structure exists, there is also a thick interstitial connective tissue, and the tumours arising from the muscular structure carry with them a large amount of this connective tissue. In some cases this latter element may be so great and so firm that the tumour may be considered as a fibro-myoma; and, on the other hand, from the comparative absence of the tissue the tumour may be quite soft. In all, however, these elements exist, accompanied by vessels, and even the hardest forms, which might be most easily confounded with true fibroma, can always be distinguished from them by the existence of the muscular structure.

The myoma nodule, once formed, does not grow merely by the apposition of homologous parts, but also by the internal increase of its component elements. This inner growth proceeds very slowly, and years may elapse before the nodule has attained its maximum size. Some of the uterine myoma rank among the largest tumours developed in the human body; they have been found to weigh sixty pounds! They belong consequently to what are called the permanent neoplasms. Not that every particular portion exists until the death of the individual, but the tumour as a whole may exist thirty or forty years, and this not as an exception. This permanency however is not absolute. The muscular structure may undergo a retrograde fatty metamorphosis, leading to a diminution in the size of the tumour, which is often accompanied by a fibrous induration. Calcification generally follows this indurated condition. They more rarely pass through a stage of softening.

The relation of the myoma to their proximity has a special influence upon their condition. They originate in the muscular structure, as has been said, and if the starting point is in the centre of the muscle, they push the peripheral layers outwards before them. This form is called the intra-parietal, or intra-muscular myoma, and is comparatively the most uncommon. All those myoma which are seated nearer the periphery of the muscle soon pass beyond its boundary. Thus a very small peripheral myoma may become entirely extra-muscular, being connected only by a small pedicle, which may in time become atrophied, and thus the myoma appears to be entirely independent, a heterologous neoplasm; but this is not really the case. Of these extra-muscular myoma there are two classes. The muscles in which these formations occur belong gene-

rally to mucous canals, and the myoma are developed upon the outer or inner surface of the muscle, and hence are either subserous or submucous. The more they grow the more do they separate the mucous or serous layer from the muscle; at first they appear as flat prominences, then round, at last pedicellated; in short they are at last myomatous polyps.

The myoma must be regarded as the result of an irritative and sometimes even of an inflammatory process. The occurrence of multiple myoma, as is often seen in the uterus, depends entirely upon the matrix tissue in which they are developed. It has nothing to do with malignity or heteroplasia, nor is it an indication of any dyscrasia. It is only a consequence of the extent of the local irritation. These tumours, however, may exert a very unfavourable influence upon the well-being of the individual without having in themselves a malignant nature. The hemorrhage from a uterine polyp may endanger life, but the hemorrhage does not proceed from the polyp, but rather from the mucous membrane which covers it. The existence of the tumour, however, is the cause of the hyperemic condition of the mucous membrane. As a consequence of the purely local character of these tumours, the various operative procedures, such as excision, ligation, écrasement, if not useful, are at least not injurious. A polyp that is once removed will never recur. A second may come in the vicinity, but it would probably have made its appearance if no operation had been performed. Positive reproduction and metastasis is unknown in the history of myoma.

The myoma may be complicated by the coexistence of other tumours, such as sarcoma, cancer, or cysts. That the myoma are capable of a cancerous degeneration may be admitted, but they have not that tendency.

The sources of myoma are comparatively quite obvious. As has been said, local irritation is one source. As a rule the disturbance begins as a catarrh of the mucous membrane which lines the canal. Chronic catarrh of the stomach, of the prostate gland, and of the uterus, usually precede the myoma of these organs. Hence these tumours belong without exception to mature life. No one form is congenital, nor are they found in the period of adolescence even. They begin after puberty and reach their maturity in the second half only of life. This may be explained partly by the ordinary seat of these tumours being found in certain organs of sexual life, and partly by the local irritability of these organs being generally acquired and rarely if ever original. Of all organs the uterus is by far the most frequently affected with myoma. Let us glance briefly at the myoma of the prostate before we proceed to the author's delineation of these tumours as they occur in the uterus. Under the name of hypertrophy of the prostate are included two separate formations, one belonging to myoma, and the other to glandular tumours. In the former of these we have to do with a hyperplastic development of the muscular structure, which is continued upon the prostate from the walls of the bladder surrounding the prostate, and penetrating between its lobes. The researches of Handfield Jones, and Külliker have shown that a very large part of the structure of the gland is made up of these muscular prolongations. Ellis and Thompson, however, have gone too far when they regard the prostate as a muscular and not as a glandular structure. It is the glandular elements that give to the organ its specific character. Thompson divides hypertrophy of the glands into two forms, the purely fibrous (muscular) and the fibrous with glandular elements. Our author prefers to consider the latter as a glandular hyperplasia. The hyperplastic myoma of the prostate consists entirely of the fibro-muscular elements, or else there is a much smaller mingling of glandular elements than is proportionate to the normal gland. In no single case has the author found the entire prostate subjected to the myomatous induration. It occurs almost invariably in nodes or lobules, either visible upon the surface, or made manifest by a section of the gland. The portions thus affected can always be distinguished by their induration and thickening, by the smooth surface of a section showing the interlacing of the fibrillæ, and by the white or whitish-gray colour. The point of selection of these tumours is on the posterior and upper portion of the gland, upon the so-called posterior or middle lobe of the prostate. Such a lobe does not however exist in a normal condition. Starting from the middle of this portion of the gland, it presses before it the posterior wall of the bladder in the region of the neck, and

above the internal orifice of the urethra. At first it is a slightly elevated prominence and after a while it becomes developed into a tumour which presses forward into the bladder, compressing its neck to the utmost degree. There is therefore a valvular obstruction to the emptying of the bladder, and the pressure of the contained water, with the action of the vesical muscles tend only to force this obstruction more closely down upon the mouth. The catheter will at first easily push away this obstacle; but after a while it will become caught in the base of the valve, and thus false passages may be made into the prostate to a considerable depth. These tumours generally have a broad base, but sometimes they have almost the form of a polyp. The next favourite locality is in the lateral lobes, and here they are generally multiple and lie imbedded in the organ. It is very uncommon to find them seated anteriorly. Hypertrophy of the prostate is acknowledged to be in general a disease of advanced life, and this is still more true of the myomatous form.

We come now to the consideration of the myoma of the sexual organs of women. These give rise to the largest tumours that are ever met with, and they have long been regarded as a hyperplastic formation. The fibroid tumours of the uterus are partial hyperplastic formations, and the ordinary hypertrophy is a general hyperplasia of the organ. The most characteristic of the partial hyperplasias is found in the neck of the uterus in old cases of prolapsus. Ruysch in 1691 drew attention to this circumstance, and attributed to it the irreducibility of many cases. The author has reported one case in which the body of the uterus measured  $6\frac{3}{4}$  inches, and the neck 3 inches. Such an enlargement might be confounded with a polyp or with other tumours. This enlargement is not of course a necessary concomitant of prolapsus, for the latter exists with complete descent of the organ. The author recognizes therefore two forms of prolapsus, one in which the position of the whole uterus is altered, and the other complicated with hypertrophy in consequence of which its fundus either retains its natural position or descends but slightly. Another form of partial hypertrophy is found in the follicular enlargement of one or the other lip of the vaginal portion; generally the anterior lip, though sometimes both are affected. This form of hypertrophy may also be divided into two classes, according as the enlargement affects the entire structure of the lips or more especially the follicular elements, but such a division is hardly wise, as the two forms are almost incomparable. This partial hyperplasia is the connecting link with the general hyperplasia of the vaginal portion on the common elongation.

We now turn to those tumours in which the muscular structure is the chief element, giving to the tumour its more prominent characteristics. The ordinary seat of these tumours is in that portion of the uterus which has the most abundant muscular structure, *i. e.*, the body, while the neck which has a less muscular character is seldom involved. Then follow the other parts of the sexual apparatus having this characteristic to a greater or a less degree, as the vagina, the ligaments of the uterus, and even the ovaries following the course of the vessels. These tumours may, under certain circumstances, be developed in any of these parts, and we have, therefore, in point of frequency, first myoma of the uterus itself, more rarely of the neck, seldom of the vagina, more frequently than the latter of the ligaments, and still more frequently of the ovaries. These tumours have long been the subject of study, and they have been designated by all possible names. It is only within the present century that any definite idea has been attached to them, and consequently any fixed principle of classification. Since the time of Bayle, these tumours of the uterus have been divided into three classes: first, the so-called fibrous or better myomatous polyps of the uterus; second, those in which the tumour is developed in the direction of the peritoneum, forming corresponding polypoid growths in the abdominal cavity; and, third, those which remain inclosed in the walls of the organ—the so-called interstitial forms. The author prefers to designate the latter as intra-parietal or intra-muscular, in distinction from the extra-muscular, which comprises the two first classes, and which he subdivides into the submucous and subserous respectively. It is not uncommon to find the three forms, or, at least, two of them, coexisting. Where the intra-parietal character is the more prominent, the tumour is more generally solitary, while in the other



forms there is very commonly a multiple formation in all parts of the uterus. In the majority of cases they are developed in the second half of life; they are never found prior to puberty, and seldom in unmarried women in the earlier period of life, but they occur among the latter class with most extraordinary frequency in later years; and although pregnancy may seem to be a derivative, it does not follow that it always exerts a favourable influence. Dupuytren reports fifty-one cases of myomatous tumours, thirty-nine of which occurred in married women; and it has been well established that the occurrence of pregnancy hastens the development of the myoma. The local hypertrophy sympathizes with the general increase of development.

That the myoma are of irritative origin cannot be denied; but that they can be traced back to the physiological irritation of pregnancy is impossible. Much more, probably, is it due to either a maximum of local irritation or a weakened condition of the point subject to the irritation. In the first class would belong cases where, by a partial irritation of the mucous membrane, some portion of the parenchyma of the uterus, was at the same time affected. The second and much more numerous class would include all cases in which any departure from the norm—any deficiency—existed. This condition might be original as in the chlorotic state existing prior to puberty, or it might be acquired as by abortion or pregnancy, in that the uterus has not contracted fully and regularly. It may also be the result of the want of use, or it may be induced by the existence of diseased conditions in neighbouring organs, or by an abnormal position of the uterus itself. We are, however, seldom in the condition to determine the first cause, as the tumour has always attained considerable size before it has even attracted the attention of the individual.

Vogel was the first to show, by microscopic examination, that the uterine fibroid was composed of the same elements as the wall of the uterus, and that it especially contained a great number of muscular fibres. The organic connection of the fibres of the tumour, with those of the uterine wall, is even to be detected without the microscope. This is especially manifest in intra-parietal tumours; the softer and more muscular the tumour, the more evident is the connection, while it more easily escapes detection if the tumour is hard and fibrous. Extra-muscular myoma appear, therefore, as nodules adjoining the walls, although in the earlier period of their existence the connecting fibres could be easily traced, while they gradually vanish as the dislocation of the nodule progresses.

The wall of the uterus is, in its middle portion, made up of numerous bundles of organic muscular fibres crossing and interlacing, the interspaces of which are filled by the interstitial vascular connective tissue. When now a tumour begins to develop, one or more of these muscular bundles begin to increase in size, and soon a nodular swelling exists. As the tumour increases, if it is situated near the surface, it soon appears as either a subserous or a submucous polyp. But even as a pedicellated polyp, it still retains its muscular connection with the uterine wall. It is only subsequently that the muscular elements of the pedicle begin to be atrophied, and then the tumour remains completely isolated, connected with the wall only by the loose connective tissue. The intra-muscular variety, of course, retain their connection much more easily; but even these, as they become indurated, may be separated from the surrounding parts, and the firmer and harder they are, the more loosely do they lie in the wall; sometimes they are so surrounded with the loose connective tissue that they can be enucleated with the greatest facility. The vascular connections are subject to the same transformations. In general, therefore, we hold fast to this, that the myoma are originally outgrowths and enlargements of the muscular fibrillæ of the uterus, in which the vessels and connective tissue are complicated. According to the relative proportion of these several elements, is the tumour now more muscular, now more fibrous, and again more vascular in its character; from the commencement some appear harder and others softer. At a later period the softer varieties may undergo hardening, and as a consequence the muscular fibres vanish, the vessels become sealed up, and there results a nodule almost entirely fibrous—nearly destitute of vessels, of extreme hardness, and having a cartilaginous appearance.

The subserous myoma, or external or peritoneal polypi, are generally seated upon the body of the uterus, though sometimes they are found upon the neck and then more commonly upon the posterior wall. They are generally multiple, and are almost always accompanied by either the intra-parietal or the submucous forms. The majority belong to the harder forms, and have a special tendency to calcification. The larger tumours of this kind give rise to various unpleasant symptoms, and may occasion inflammation of the peritoneum with consequent adhesions. Sometimes their growth will be attended by an elongation of the pedicle, the uterus will be drawn up out of the lesser pelvis, and the uterine neck assumes a peculiar form, not unlike the urethra, becoming a long and narrow channel with a comparatively thin wall. The diagnosis of such growths is beset with difficulty, and they are often attributed to an ovarian origin. They are extremely wearing to the patient, and the uterus may suffer from the mechanical traction. Several cases of spontaneous separation of the neck, from this cause, are on record. The bladder also is involved in the mechanical derangement. It is drawn upwards, and can be but partially filled, thus causing frequent micturition, while at the same time it can never be fully emptied, and vesical catarrh is thus induced. The rectum, also, is involved in the disturbance.

The submucous myoma, or the internal polypi, may originate just beneath the mucous coat, or there may be several muscular layers between the myoma and the mucous covering. Uterine polypi have long been the subject of observation and study, and we shall pass briefly over this portion of the lecture. They are divided into the pedicellated and non-pedicellated forms. These are seldom multiple, though sometimes combined with intra-parietal and subserous myoma, but they are generally solitary, whether considered as polypi or as myoma, and hence the unusually successful results of their removal by operation. They belong almost always to the soft forms of myoma. As a rule, they consist of a reddish or whitish tissue made up for the most part of muscular fibres and forming lacunæ or lamellæ. These are loosely bound together and easily separated in making a preparation, and often present, therefore, a spongy or cavernous appearance, like many vascular or lymphatic tumours. But it is very seldom that we find the lobular compound structure so often seen in the subserous and intra-parietal myoma. The majority of polypi are seated in the fundus uteri. So long as they remain in the cavity of the uterus, above the external os, the uterus stands somewhat higher than usual, and the tumour may be confounded with pregnancy. When it has passed the os and descended into the vagina it may induce inversion. Whatever may be the location of the polyp, its surface is always the seat of irritation, and its mucous coat, as well as that of the vagina and uterus, cause many of the attendant symptoms. This membrane is regularly in a condition of chronic catarrh, and united to this, there is almost always a great tendency to hemorrhage. This latter condition is due, partly to the irritative hyperæmia of the mucous membrane and partly to the stasis caused by the pressure of the uterus upon the free extremity of the polyp, especially when this has passed the orifice and is thereby constricted. This extremity then becomes of a dark-red colour; the mucous covering, and even the interior of the polyp are filled with blood, and sometimes even there exists thrombosis of the veins within the polyp. External hemorrhages always occur, increasing at the time of the menses, though they may be at other periods most threatening to life. The blood is given off from the mucous coating of the polyp and not from its interior. After long standing, the surface becomes more seriously inflamed and may suppurate or ulcerate, and even become gangrenous. In this way the polyp may be sensibly diminished and even entirely destroyed; or it may lead to its separation, and it may be discharged spontaneously. Many of the cases reported as thus occurring are, the author suspects, rather of intra-parietal myoma, situated near the internal surface. The discharge of actual polypi must be attended with manifest contractions of the uterus, either following an accouchement induced by the activity of the hyperplased uterine walls, or in consequence of violent emesis.

The intra-parietal myoma, or as they are commonly called fibroid tumours of the uterus, include not only the smaller formations which are scarcely visible

until a section of the wall is made, but also large tumours which may be situated more toward the external or toward the internal wall, but which are always to be distinguished from polypoid growths by the fact that they never extend beyond the wall, but are constantly surrounded by the muscular structure. The muscular fibres and the vascular structure are originally continuous, as in the other forms, but here the continuity is preserved for a much longer time, and hence, perhaps, there is one reason for their attaining such large size. Their existence often give rise to the suspicion of pregnancy. Some of these tumours have been found to weigh from eighty to one hundred pounds. Walter describes one, that weighed seventy-one pounds, and measured sixteen and a half inches in breadth, and seven inches in thickness. These very large tumours are either solitary, or their companions, be they subserous, submucous, or intra-parietal are of quite insignificant size. In the smaller varieties, a certain multiplicity generally exists. The point of election of the intra-parietal myoma is the posterior wall of the uterus; sometimes they occupy the entire face of this wall, including even the neck; very frequently they are seated more towards the fundus; they may, however, be developed in any portion of the uterine wall. Next to the posterior wall, in point of frequency, is the fundus, and then the anterior wall. They have generally a round and even surface; the compound forms present a more lobular appearance.

These tumours exert a special influence upon the configuration of the uterus. Its size, shape, and position, are all materially altered in manifold ways, by the size and position of the tumour. The uterine cavity seldom preserves its normal direction, and the introduction of the sound is often attended with the greatest difficulty. It is generally bent either upon its surface or toward one side; sometimes it is twisted in various directions, and furthermore, it is generally elongated. If the tumour presses into the cavity, the latter is widened, otherwise it becomes narrower from the apposition of the enlarged walls. It is coated with a smooth but thickened mucous membrane, which has a tendency to profuse secretion and also to hemorrhage, producing especially, an increase of the menstrual flow.

The position of the entire uterus is also materially affected by these growths. If the tumour is in the posterior wall, there is ante flexion of the organ, and if it is in the anterior wall, retro flexion. The flexion generally occurs in the region of the internal os. When the tumour is in the lateral walls, there is a lateral flexion. The form of the uterus is sometimes so completely altered that it is almost impossible at the section to determine the anterior from the posterior, or the right from the left. The best help to a proper discrimination is the insertion of the round ligament, and the position of the ovary behind the Fallopian tube.

These tumours of the uterus may undergo fatty degeneration and be partly absorbed. The question arises, how far can this process be carried? Will the tumour entirely disappear? This has been often asserted of late, and the apparent result is ascribed to the prolonged result of certain mineral waters. Our author is among those who do not believe that a complete disappearance of the tumour is ever produced by these means; that it may be decidedly diminished, is without doubt. This diminution is generally accompanied by induration, and upon this, closely follows cretation. The old descriptions of uterine calculi are to be traced doubtless to such an origin.

We have thus far spoken of the hard fibrous myoma. In distinction from these there is the soft myoma, in which there is an abundance of elastic intercellular tissue, containing a certain amount of fluid, and resembling almost an oedematous condition. It is not merely an infiltration of fluid, for under the microscope we find that the tissue is made up of more or less round nucleolated cells, of the size and shape of mucous or large lymph corpuscles; there is proliferation. A second variety, however, occurs, in which there is an oedematous softening unaccompanied by any indications of the existence of proliferation. In either of these cases the impression might be given of a cyst containing fluid; but if a puncture were made, only a few drops of fluid would escape. A third form is the purely muscular form, such as the old writers described as fleshy tumours, or sarcoma in the narrowest sense of the word. Here, there is but little inter-

cellular tissue, and that is very soft and friable; the muscular structure is made up of thick movable fasciculi, but they are not interlaced to the same extent as is the case with the fibro-myoma; the section of such a tumour, too, has not the white, tendinous appearance of the harder form, but a reddish character like that of the pregnant or puerperal uterus.

The relation of uterine myoma to pregnancy has often been considered. Where the form and position of the uterus has been altered in the manner above described, there is no doubt that conception may be hindered and even prevented by the mechanical obstacle presented. It is equally clear that the myoma does not prevent conception when these conditions do not exist. If pregnancy occurs, and the myoma does not increase, the uterus may develop and bring forth its fruit, and then pursue its retrograde course. But, on the other hand, there are many facts which show that the existence of the tumour has been entirely unknown until some obstacle to delivery or to the proper retraction of the uterus has shown itself. The organ cannot retract because there is a large myoma in its walls, and hence there is danger of severe hemorrhage, of thrombosis, and of inflammation. In such cases the author does not think that the tumour was developed during pregnancy, but that it had already existed, and was stimulated by that condition to increased activity, to more rapid growth. Such cases are always instances of the soft myoma rich in muscular structure, and belong generally to the earlier years of life.

We pass over the cavernous myoma, and those in which the myoma of the uterine wall has become transformed into a cystic tumour, and come to the surgical treatment. As we have seen, this is simple and sure in the case of polypi. The ligature, which has been so long and so favourably known, is still open to the objection that it may cause gangrenous inflammation in the uterus and vagina, and may lead to septicæmia, and, if large veins have been strangulated, to thrombosis. Excision is much the quickest and the safest: the danger of hemorrhage is more apparent than real, for the vessels that enter the pedicle of the polypi are of such size that they retract vigorously and quickly. This is specially the case when the *écraseur* is employed, and still more so if the *galvano-caustique* be used. In the tumours of the wall extirpation of the uterus has often been performed, sometimes as a sequence to a mistaken diagnosis. The author gives due credit to our American practitioners for the cases they have reported, and concludes that the operation can only be considered justifiable in exceptional cases.

We pass over the consideration of the myoma affecting the remaining portions of the female sexual apparatus, and proceed to the next lecture upon the second of those classes of tumours made up of the tissues of animal life, *i. e.*, the neuroma. This name is not applied to tumours found upon the nerves, nor to such as in their progress involve a nerve, but only to such as are chiefly composed of nerve substance. The *tubercula dolorosa* of Wood has been often classed under the neuroma, but the minute anatomical investigation of these tubercles, in many cases, fails altogether in detecting the existence of nerve substance, and in only one case has our author succeeded in proving that the tubercle was made up of gray nerve fibres.

The true neuroma is, in the author's sense, a nervous tumour of a hyperplastic nature, *i. e.*, it proceeds from a nerve and is made up of nerve fibrillæ. This is the general character, and is applicable to all, whether found as most commonly in the spinal, or more rarely in the sympathetic, or still more rarely in the cerebral system. The term is not applied, however, to nervous tumours of the central organs themselves, consisting of a hyperplastic development of homologous tissue, although they may be made up of nerve fibrillæ, or of ganglion cells, and belonging to the brain, the spinal marrow, or the ganglia.

The neuroma is a compound, or ganoid tumour, containing not merely nerve fibres, or nerve cells, but some intercellular tissue in addition, and also some vascularity. Hence, the composition and appearance of the tumour will vary with the proportional preponderance of these different elements. In distinction from the pure neuroma, therefore, in which the nerve elements preponderate, we have the fibro-, glio-, or myro-neuroma, in which the interstitial tissue is in the ascendancy. With regard to the nerve elements there is also

a great difference to be observed in different neuroma. There are the fibrillary or the fascicular forms, the white or myelinic, and the gray or amyelinic neuroma. To the ganglionic forms the term medullary neuroma may be applied. Neuroma may exist as a heterologous formation, *i. e.*, arising from a part which normally has no nerve structure. In such cases, however, it is only coincident with other heterologous productions in the same growth, and does not form the chief portion. They are generally, however, to be considered as hyperplastic. Cicatricial neuroma occur sometimes when a nerve has been cut. The nodule that is formed is at first a growth of the interstitial nerve-tissue; afterwards nerve fibres are found entering into it. It is a process of regeneration. The same tendency is shown in the amputation neuroma. These vary in size, according to the size of the nerve that is cut. The largest are generally found upon the sciatic, and the branches of the brachial nerves. This relation, however, is not constant. The neuroma on the amputated forearm of one person will be larger than that on the arm of another. Nor is it always the exposure to irritation from use or position that determines the size, as they have been found larger on the stump of an arm amputated near the shoulder-joint than on that of a thigh exposed to all the irritation of an artificial leg. This difference may perhaps be due rather to the irritation caused by a prolonged process of suppuration, but this cannot yet be established. They are made up of a close web of nerve fibres, with comparatively little connective tissue. Each section through such a nodule shows bundles of nerves crossing in all directions. The continuity between the nerve and the neuroma is always manifest to the naked eye. Next to these forms of neuroma come those that are caused by the ligature of a nerve.

But aside from these traumatic conditions neuroma are developed in connection with chronic inflammatory affections, such as congenital and acquired elephantiasis, and with constitutional diseases, as syphilis. These examples lead to the consideration of the multiplicity of neuroma. In some cases there is a congenital and even an hereditary tendency to their formation. In this connection our author considers as especially instructive the case reported by Dr. Hitchcock in the number of this Journal for April, 1862. The central neuroma are without doubt congenital, and usually accompany other diseased conditions, which are often of a decidedly irritative nature. The neuroma of this class are found alike in the gray and white substance of the brain. Encephalocele or hernia cerebri, when uncomplicated with hydrocephalus, and also some forms of congenital tumours of the sacrum and coccyx belong to this category.

In addition to the neuroma which are of a traumatic or of congenital origin, there are a large number which must be considered of spontaneous growth. These are the forms which acquire the largest development, and those which are presented most frequently to the surgeon for examination and treatment, are such as belong to the harder neuroma. Many instances of the frequent recurrence of these tumours after extirpation are noticed, and this fact has led to the idea of their malignity. The supporters of this view base their argument upon the local multiplicity, the tendency to reproduction in the immediate vicinity, and the capacity of a neuroma under the skin for pushing the skin outward, forming an attachment to it, and finally terminating in ulceration. According to the author's experience hitherto, every true neuroma is a localized and benign tumour.

The course of these tumours resembles closely that of the normal constituents of the human body. Scarcely any pseudo-plasm assumes so entirely the character of permanency. Generally they attain to only a very small size, even after years of existence. The very large nerve-tumours, which are met with, are not instances of simple hyperplasy. Whether they are subject to suppuration and induration is yet a point to be investigated. The same is true of fatty degeneration. The process of degeneration is characterized more frequently by softening, which, when it occurs in the interior of a cyst, leads to a cystic formation. Ulceration is not characteristic of the neuroma; when it does occur it is, as we have stated, in connection with a tumour situated just beneath the skin, and is at first simply of the skin, and only at last attacks the neuroma. There is no

such thing as infection from these tumours; all that has ever served for the groundwork of such an opinion is their multiplicity; this may be either local or general.

In regard to treatment when the tumour is large or excessively painful, the amputation or exarticulation of a limb, which was hitherto so frequently resorted to, is now seldom called for. When the tumour involves the whole of a nerve trunk, constituting a total neuroma, it may be removed with a portion of the nerve: paralysis may ensue but it is often of a transient nature. If the tumour involves only a portion of the nerve, constituting a partial neuroma, it may be dissected off from the remaining fasciculi, and thus a portion of the nerve may be preserved in its integrity.

The next lecture is upon the third class of tumours composed of the tissues of animal life, viz., those which are constituted chiefly of bloodvessels, vascular tumours, or angioma. Tumours composed of extravasated blood are not included in this designation; they have already been considered under the name of hæmatoma. We are to consider only such tumours as are composed of newly-developed vessels, or of vessels with newly-developed elements in their walls. Therefore the enlargement proceeding from a simple dilatation of the vessels—*angiectasia*—is also excluded. It is sometimes difficult to distinguish these, inasmuch as the walls of the vessels in the latter case are altered. But the true characteristic of the angioma is manifest in the smaller branches of the vessels in the capillary system: the tumour is found there and supplants the capillary vessels, and vascular sacculi exist in their place; these are the so-called cavernous forms. A second variety, the simple angioma, or telangiectasia, differs from the preceding, in the capillaries being still discernible, but they are greatly dilated and their walls have undergone decided alterations, especially in thickness. The arteries and veins may also be involved, sometimes the one and again the other system being the most prominently affected. If a simple vein or artery is dilated, we call it a varix or an aneurism, and if the dilatation extends over the entire course of the individual vessel, the name angioma racemosa is given it by the author. It must be remembered that as the vessels enter into and form an important part of many different kinds of tumours, so we may have all the conditions just alluded to in such tumours, and hence these are to be considered as telangiectatic varieties of such tumours. But here we have only to do with such tumours as are composed entirely or almost entirely of vessels or vascular elements.

We consider first, then, the cavernous form or angioma cavernosum, sometimes misnamed, *nævus cavernosus*, aneurism by anastomosis, fungus hæmatodes, etc. If such a tumour upon a living being is cut into, the blood pours forth from all parts, generally in a continuous stream, sometimes with jets and pulsations. If the tumour be extirpated, the blood empties itself, and there is left a whitish reticular tissue, containing numerous cavities opening into each other. Injections made into it pass freely from one cavity to another, and into the veins which are often enlarged and tortuous. The cells are lined with delicate pavement epithelium. Beneath this layer the substance of the network is made up of a thick connective tissue, with its nucleated cells, sometimes in combination with elastic fibres, and sometimes with smooth, muscular fibres. The latter element often forms a chief feature of this tissue, arranged in concentric layers around the cavities, and again it is entirely absent. In the coarser divisions, vessels may be found upon the walls—*vasa vasorum*—generally of a capillary nature. Nerves have been traced upon the outer coatings. Such are the essential characteristics of the cavernous angioma. Besides these one often finds portions of the original tissue in which the tumour had its seat, as *e. g.*, hepatic cells in angioma of the liver, fatty lobules and fat cells when the tumour is in the fatty tissue.

These tumours correspond still farther in some respects to the corpora cavernosa and other normal constituents of the human body; they possess a certain degree of erectility, *i. e.*, they undergo decided changes in prominence and colour. This of course is only true of such as are seated near the surface of the skin; when they lie deeper the difference in size is only perceptible to the touch. It is not always clear whether this difference in size is of an active or of a passive

nature, whether it is caused by an increased flow of blood, or by an obstacle in the passage of the ordinary current. When it is of an active nature, the cause is found in some preceding excitement, perhaps affecting the mind, perhaps attendant on the menstrual flow, at all events the result of a nervous impression.

The connection between the angioma cavernosum and the vessels, especially the veins, can be clearly established. The sacculi are not, as many have stated, blood cysts. The blood circulating in them has all the characteristics of blood in any other part of the body, and from them the veins can be injected. The arteries convey the blood to the tumour, and the veins carry it back, and hence, according as the tumour implicates one portion more than another, it may be classed as an arterial cavernous, a simple cavernous, or a venous cavernous tumour. But it must be remembered that the capillary apparatus is the original and actual seat of the formation.

There are two kinds of angioma cavernosum, the one having a capsule and being circumscribed, the other diffuse. The capsule is always absent in angioma that do not belong to the cavernous variety. When it exists, it is composed of a thick and connective tissue, proceeding from the same structure in which the tumour was developed, and from it proceed the various septa, which enter into the formation of the tumour.

With regard to their development the author distinguishes two stages, one of vascular formation and one of dilatation and transformation into cavities. They increase by a progressive irritation inducing granulation in the proximity, and developing new vessels in the granulating tissue or matrix. The blood passes into the new vessels from the old, expands them more and more, and finally they become tortuous. If this seems like a simple process of dilatation, it is yet not one of a passive nature, for then the walls would become thinner, and the contrary is the case: it is a condition of hypertrophy with dilatation, and hence it is the result of an active process. The angioma is therefore a proliferation tumour depending upon irritative processes. Looking at the history of individual cases we find that they generally extend back over long terms of years; they are seldom congenital as cavernous tumours. When existing at birth they are generally smaller or larger patches of a telangiectatic character, out of which by subsequent growth the cavernous form is developed. This development may take place rapidly in the course of a few months, or the congenital patch may remain for a score of years and then assume the cavernous development. The causes of this subsequent development are generally obscure; sometimes they may be traced to a mechanical injury, a blow or a wound. Probably the majority of the cavernous angioma, as they occur in the internal organs, are instances of this tardy development.

We will not follow the author into the description of the individual portions of the body in which the angioma cavernosa are found, but here content ourselves with the statement that they may be both external and internal. The external may be divided into the superficial and deep. The point of predilection of the former is the head with the adjoining portions of the neck and throat; the majority of all known cases of cavernous angioma are found in this region. We may arrange the different parts of this region in point of frequency as follows: the auricular region, the lips, the root of the nose, the eyelids, the cheek, and lastly, the coverings of the cranium. The internal angioma are found most frequently in the liver, and it may be a question whether their occurrence in this organ is not almost as frequent as at any other point; they are also found in the kidneys and spleen and in the digestive canal. We now pass to the consideration of the course of these tumours.

When they project above the surface of the skin, the epidermis may be pushed up in the form of small blisters or pustules. These burst and a scab is formed; if this process is repeated the general aspect may resemble that of a malignant formation. Meanwhile hemorrhages may occur and be profuse, even endangering life. These hemorrhages may be coincident with the menses, or have a certain periodicity of their own. Sometimes a spontaneous atrophy takes place, and the only trace that is left may be a thickening of the skin or the subcutaneous tissue, or a discoloration of the surface. Again the cavernous angioma

may degenerate into a cystic formation, and the cysts contain either blood or serum. The former are large and filled either with fresh or altered blood; the connection with the vessels is well marked in the first case. The serous cysts are generally smaller, filled with a yellowish serum, containing sometimes cells or fatty matter, and shut off from communication with the vessels. The question whether they can ever degenerate into cancerous growths is discussed. The author refers to the combination of malignant growths with the angioma, and while he considers the latter as benign in their character, yet admits exceptionally the probability of a malignant degeneration.

The treatment can of course be only local. Much may be gained by an expectant plan, as we have seen that in some cases the tumour disappears altogether. If however it continues to make progress, we have every reason to interfere. The mildest method is by compression, and, where we have a sufficient point of support, this yields good results. Caustics may be used, as nitric and sulphuric acids, the Vienna paste, the galvano-caustique, and the actual cautery. These, however, leave large and unsightly scars, and hence their application will be limited. The double ligature is well adapted to those having a broad base—still better is the introduction of several threads ligating individual portions of the tumour. Ligation of the afferent arteries was previously employed, but this method is no longer in use. Excision, as recommended by John Bell, with the special and repeated injunction "*not to cut into it, but cut it out,*" was the best mode of treatment until Chassaignac brought forward the *écrasement lineaire*. Some cases will be better adapted to the former and others to the latter method. The attempt to cause the blood in the tumour to coagulate by means of the injection of styptic fluids or by the galvano-caustique is not recommended. A single mode of treatment for all cases is of course impossible. In no class of tumours has the surgeon to study so carefully all the peculiarities of the individual case before he determines upon the course he is to pursue.

The second variety of angioma is, as we have said, the angioma simplex or telangiectasis, *navi*, *navi materni*, *navi vasculosi*. These have no cavernous structure, so long as they exist as simple *navi*. A congenital cavernous angioma is exceedingly rare, and many *navi* afterwards, as we have seen, become developed into cavernous angioma. If, therefore, the telangiectasis seems in some measure to be the preliminary stage of the cavernous tumour, it must, on the other hand, be borne in mind that the second stage is frequently never reached; the telangiectasis remains, and does not change its character. These growths are often congenital, *i. e.*, they are *navi* in utero contracti, but many of them first show themselves in the first few days or months of extra-uterine life, and others closely allied to the *navi* in nature, such as hæmorrhoids, are only developed in adult life. These all have a common anatomical character, and cannot be separated.

The history of the *navi vasculosi* is identified with the skin and the parts lying immediately adjacent, whether subcutaneous tissue and muscles, or mucous membranes. They have the same points of predilection as the cavernous angioma, but their external appearance is quite different. They are not raised above the surface, but extend over the surface, and seem to be rather alterations or substitutions of the tissue, than a new growth. Yet there is a truly new formation and a growth of vessels or vascular elements. There is indeed a dilatation of the original vessels, but this is not all. They are scarcely ever sharply defined, and have a bluish-red or a bright red colour. If they are quite superficial, the colour is brighter, but, when seen through layers of unaltered cutis, the blood contained in the vessels appears of a bluish colour. The difference does not depend upon a venous or arterial constitution. *Nævi* may be divided into the superficial and subcutaneous forms. The condition of the vessel varies in these. Where the superficial variety has attained any size, there is more generally a greater development of the smaller arteries and veins, than in the more deeply-seated *navi*, where the alteration affects more the actual capillaries.

The subcutaneous *navi* have frequently more of the appearance of a tumour; they have a sharper contour though never surrounded with a capsule, and as they originate in the subcutaneous adipose tissue, they have often a lobular



form. If they are extirpated, the blood flows out, and they have an almost glandular aspect. The enlarged vessels wind round like the thread of a corkscrew, and in a section it is almost impossible to follow the course of any single vessel. These vessels are no ordinary simple capillaries, but rather canals with walls almost twice as thick as the original capillary. They are hyperplastic capillaries. Many cutaneous angiomas correspond in this respect with the subcutaneous, and we therefore have a distinct class of simple hyperplastic angioma in distinction from those which have vessels with thin walls. In the superficial forms the vessels are tortuous, and small sacs may be seen with the naked eye upon them. They are supplied by arteries, which are also enlarged and of increased muscular structure; from these arteries smaller branches issue forth forming a network of capillaries of unusual thickness; from this network veins arise, which in turn are large and often varicose.

From these simple forms of angioma we must distinguish the angioma varicosum or venous forms where the roots of the veins are specially dilated, and the capillaries are but little involved. If we cut into these, we see by the naked eye the enlargement of the small venous trunks, sometimes accompanied by varices, sometimes entirely regular. By the microscope we find a large number of these sacs penetrating the various layers of the tissue, the adipose as well as the connective, and bearing no proportion in size to that of the vessel from which they proceed. If the latter, *e. g.*, is as large as the outlet of a sudoriferous gland, the sac may have the size of the gland itself.

The varicose and the simple angioma are either congenital or show themselves soon after birth. At birth they generally appear very small, either as minute reddish or bluish points, or a few dilated vessels may be seen. Their growth is not rapid; indeed, a spontaneous retrogression has been well established in many cases. Many vanish under anæmic conditions; some yield to compression. On the other hand, some undergo inflammation, ulceration and mortification. Again, others give rise to hemorrhage upon the surface, and call for operative interference.

The treatment is much the same as for the cavernous angioma. But as those we are now considering are of much less pathological significance, and do not give rise to such threatening symptoms, the expectant plan is more frequently applicable for a certain time. And, on the other hand, as they seldom disappear when left to themselves, but rather extend further and further into the tissues, the expectant treatment should not be too long depended upon, but extirpation is to be resorted to, or in case the tumour lies near important vessels linear *écrasement*.

We seldom find anything in the internal organs which precisely corresponds to the simple angioma of the exterior. The hæmorrhoidal growths form the nearest approach to such a structure. These begin with a slight alteration of the surface, with slight changes of structure. It is only after a certain continuance that they attain the prominence of nodules or hæmorrhoidal tumours. They are external or internal or mixed, according as they are subcutaneous, external to the anus, submucous, within the sphincter, or partly submucous and partly subcutaneous. The internal or the mixed varieties give rise to hemorrhage—the external are the so-called blind piles. They are not to be confounded with the numerous folds which are but duplicatures of the skin. The view that hæmorrhoids are varices of the anal veins, although advanced and maintained for centuries, has of late years given rise to much discussion. Some have thought that they were an extravasation of blood; others, that they were aneurisms by anastomosis. According to the author's observation, all the vascular tumours around the anus belong to one single category—that of varicose tumours—and the arteries are only subsidiarily affected. The plexus hæmorrhoidalis is the portion of the venous apparatus in which the affection is developed, and it is the tributaries of the vena cava, rather than those of the portal system, that suffer. They have a bluish or bluish-red colour, and if cut through, are found to be composed of sacculi, varying in size from the finest point to a cherry stone, filled with blood. Although they have a structure somewhat similar to the cavernous tumours we have hitherto considered, still there is this difference, that here the sacculi do not communicate one with the

other. They are surrounded with an enveloping tissue, which is well supplied with vessels, especially of an arterial character. All hæmorrhoidal tumours are composed of these two parts, the ectasied vessels and the surrounding membrane. They belong generally to the later periods of life. Some have thought they occur more frequently in women than men; some, that they occur in southern regions more frequently than in colder climates. Others have held exactly the opposite of both of these views. The habitual or even periodical character of the hemorrhage has led to a comparison with menstruation. All of these opposing views have arisen from the confusion of the anatomical and the physiological facts. The hemorrhage is a physiological, the tumour is an anatomical fact; the latter may exist for years without the former. There is a local affection of the anus, and this becomes developed into a disease, from its relations with the entire economy.

The local affection has been ascribed to all manner of mechanical causes. Pressure upon the portal veins or upon branches of the vena cava, or a sitting posture, thus compressing the abdominal viscera, have all been held to produce the trouble. The most frequent precursor and attendant upon hæmorrhoidal formations is constipation, the retention of fecal matter, which presses upon the hæmorrhoidal plexus. Nor does this retained fecal matter exert merely a mechanical influence, it is at the same time a source of irritation. The solid portion, which remains behind after the absorption of the watery elements, degenerates, and gases are developed, which produce a chemical irritation of no slight importance. This irritation may be developed into a positive inflammation like dysentery, but it more commonly assumes a catarrhal character. It has been often observed with regard to other organs, as *e. g.* the eye, that frequent repetitions of catarrhal inflammation lead to dilatation of the vessels. And the author is inclined to regard the hæmorrhoidal affection as a chronic catarrh of the rectum having periodic exacerbations. By this view we can explain not only the bleeding hæmorrhoids, *i. e.* the varices and the hemorrhage, but also the so-called mucous hæmorrhoids, which are made up of the tumefactions of the mucous membrane, and accompanied by its secretions. And herein there is a certain analogy with menstruation; for the latter is not merely a hæmorrhagic process but the result of a combined irritation, in consequence of which the lining membrane of the uterus undergoes a change similar in some respects to a catarrhal condition. It must be allowed, however, that for the existence of the hæmorrhoidal nodule, the anatomical condition of the parts is not alone to be kept in mind, but also the mechanical agency of the retained fecal matter. Still other elements are also to be considered, as the character of the ingesta. A high liver will be much more likely to be affected with hæmorrhoids than one who lives frugally and temperately. A condition of general plethora, or as it has been called a venous dyscrasia, where varices may be found in other parts of the body, often a congenital, but more frequently an acquired condition, may also be a predisposing cause. Pregnancy has long been recognized as exerting a special influence in the formation of these tumours.

Under the combined action of these various influences the hæmorrhoidal angioma attains its full development. If the irritative character remains dominant, the nodule has a more solid constitution, inasmuch as the submucous and subcutaneous, as well as the superficial tissues are more fully developed in connection with the vessels. If, however, the disposition to phlebectasia is more pronounced, then the growth of the surrounding parts stands more in the background, and the angioma is developed in its purest form.

With regard to hemorrhage it has been already observed that there is a certain periodicity, resembling, therefore, somewhat the menstrual flow. But it is not so regular, and the returns may be every day, or every fall and spring. The question has been much discussed whether the hemorrhage is arterial or venous, but the author, as is evident, thinks it of venous origin, and probably due to the bursting of the varices. There are, however, two sources from whence the blood may proceed—from the veins of the mucous membrane, or from those of the submucous, and subcutaneous vessels. There may be hæmorrhoidal bleeding without the hæmorrhoidal nodule, just as the latter, as we have seen, may exist without the former. Where bleeding occurs, and the nodule does not

diminish, we may infer with propriety that it proceeds from the hyperæmic mucous membrane. This condition is closely allied to the hæmorrhagic catarrh, the analogue of which is found in the menstrual and pseudo-menstrual alterations of the uterine mucous membrane. When the blood proceeds from the nodule it is frequently the merely passive result of increased lateral pressure, as in defecation. It is of the utmost importance to clearly distinguish these two varieties. They are often combined and either may exist without the other. The first depends more upon the irritative condition and is united to those general symptoms, which go under the name of hæmorrhoidal disease, while the second or passive form may exist for years without any general symptoms.

The amount of blood lost is sometimes so enormous as to place the life of the patient in danger. Sometimes a single severe hæmorrhage has been followed by a diminution of the turgid nodules, and their ultimate transformation into shrivelled bunches. Another termination may be in the so-called inflammation of the hæmorrhoid. The surface of the nodule becomes inflamed, giving rise to excoriations and induration, finally terminating in ulcers. This inflammation has its origin in the enveloping membrane, and is caused by mechanical irritation of various kinds. Another termination of internal hæmorrhoids is strangulation from being caught in the sphincter, and subsequent gangrene. Still another is in the formation of hæmorrhoidal thrombosis. The clot may lose its watery elements, and become dry and hard, adhering to the walls, or, when the vessels are entirely obliterated, it may become a mass of connective tissue. But more frequently it degenerates into a puriform substance, and gives rise to a venous abscess. As a rule, hæmorrhoids cannot become malignant; some instances on record seem, however, to render such a termination possible.

The author seems to prefer the treatment by the *écraseur* or with the loop of the galvano-caustique, to all other methods.

We pass over the remaining portion of the lecture as we have already occupied too much space. When the concluding portion of the work is published we shall hope to resume the thread here broken. E. T. C.

ART. XXV.—*St. Bartholomew's Hospital Reports*. Edited by Dr. ANDREW and Mr. CALLENDER. Vol. IV. 8vo. pp. xx., 336. London: Longmans, Green & Co., 1868.

THE present volume of this valuable series contains twenty-one papers, and is adorned with a lithographic plate and several wood-cuts. The first paper is a biographical memoir of the late Sir William Lawrence, Bart. The distinguished subject of this notice was one of those wonderful old men of whom England has produced so many, the active period of whose lives is prolonged to an age at which, in this country, all active work has long ceased. "The life of Sir William Lawrence closed on the 5th of July, 1867. He had nearly completed his eighty-fourth year. Not more than two years before his death he resigned his active duties at St. Bartholomew's Hospital, but even then he did not cease from work, and was attacked with apoplexy just previous to an examination at the College of Surgeons." This memoir (by an anonymous pen) is very well written and very interesting; if it have a fault, it is that which besets all necrological notices, "*de mortuis nil*," etc., but this can the more easily be pardoned when the subject has been so deservedly eminent as was Lawrence.

The remainder of the volume is occupied with strictly scientific papers, which we shall now consider in succession.

ART. I. *Removal of an Enormous Pendulous Tumour from the Back*, by LUTHER HOLDEN.—The patient was a man æt. sixty-seven, and the tumour weighed thirty-seven pounds. "It consisted of masses of fat of various consistence, intersected by strong fibrous partitions. In the centre of it was a

large irregular cavity, containing about two quarts of thick oil, with small lumps of degenerated fat floating in it." The patient made an excellent recovery. Two well executed wood-cuts represent the appearances in this remarkable case.

Art. II. *On Spasm, or Excessive Contraction of the Muscular Coat of the Urethra, commonly called Spasmodic Stricture*, by WILLIAM S. SAVORY, F. R. S.—This paper is of much interest, and worthy of careful consideration. The following paragraph expresses Mr. Savory's views upon the subject in question: "With reference to the assertion that examples of pure spasmodic stricture are very rare, of course in every case there must be something wrong to produce excessive or spasmodic contraction, and it is the business of the surgeon to discover and correct the mischief. But if by pure spasmodic stricture is meant the occurrence of spasm apart from inflammation or structural contraction, it cannot be conceded that the statement is accurate. I believe there is evidence to show that not only is inordinate contraction of the muscular coat of the urethra commonly, nay, almost constantly, associated with stricture from structural change, but that undue muscular contraction of the urethra, apart from the presence of any structural change—or simple spasmodic stricture—is much more common than it is supposed to be, its effects being often attributed to permanent stricture."

While we, of course, are not disposed to deny the correctness of this view, we think it but right to say that we have generally observed that the number of cases of spasmodic stricture met with by any one surgeon is usually much less when he has been many years in active practice than in the days of his novitiate; whether from spasm disappearing before increased skill in the use of the catheter, or from other reasons, is a question for individual judgment.

We entirely agree with Mr. Savory in commending the employment of general measures, and especially rest in bed, before the use of any mechanical treatment for cases of stricture.

Art. III. *On the Pathology of Fatty Degeneration*, by EDWARD LATHAM ORMEROD, M. D., Cantab.—This is an elaborate paper of thirty-seven pages, and though scarcely clinical enough in tone to be appropriately placed among Hospital Reports, is so valuable in itself that we cannot regret its publication. The various changes which are included under the name of "fatty degeneration" are well discussed in their several relations, and the whole paper may be read with profit by both the student and the ordinary practitioner. The following summary we quote for the benefit of our readers: "The pathology of fatty degeneration may be summed up in a few lines. And, as a preliminary, I must confess that a very attentive study of fatty degeneration continued through many years, has much diminished, in my eyes, the importance of the specific character from which the process takes its name. Grave as are the diseases with which it is connected, and on which it ensues, the fatty change itself is comparatively of little moment, and quite secondary to the degeneration, in date as well as in importance. It is an infiltration of fatty matter which is derived immediately from the passing blood, or is made on the spot under its influence. And, as far as concerns the human subject, it is not the physiological form of fat, margarine, which is thus infiltrated, but oleine. The structures which are infiltrated in this manner must be previously disorganized, the infiltration being a consequence, not a cause, of the disorganization. Structures in healthy vital activity either do not admit of such infiltration; or, where their physiological constitution allows of this, they have the power of clearing themselves of the oil. They must be disorganized, but they must not be dead, as far as death implies liability to chemical decomposition, or disconnection with the current of the circulation. For experiments show that, under such circumstances, fatty degeneration, as expressed by the formal replacement of healthy structure by fatty matter, never ensues."

Art. IV. *Case of Popliteal Aneurism Cured by Compression*, by BENJAMIN BARROW.—The patient was a man aged thirty-one. The treatment was begun about two weeks after the appearance of the aneurism, and a cure was effected in the space of fifty-nine days.

Art. V. *On Rickets*.

Art. XVIII. *On Rickets; Further Observations*, by SAMUEL GEE, M. D., Lond.—In these papers, which we may consider together. Dr. Gee investigates (1) the frequency of rickets, and the age at which it occurs; (2) latent rickets; (3) rickety deformities; (4) dentition in rickets; (5) the apyrexia of rickets; (6) the urine; (7) Visceral disease; (8) the spasmodic disposition; (9) the nature of rickets; (10) the treatment; and lastly, adds a few notes upon the bibliography of the affection. The "further observations" embrace the account of a *post-mortem* examination in a case of rickets, which proved fatal from acute tuberculosis. Dr. Gee's remarks are founded upon a very large experience—he examined 635 cases of rickets in one year at the Hospital for Sick Children—and he appears to have gone very thoroughly into the literature of his subject, so that his essay, while not professing to be a complete monograph, is really exhaustive upon the particular topics with which it deals.

We quote in full Dr. Gee's remarks upon treatment, which seem of considerable importance: "In cod-liver oil we possess a pharmaceutical agent worthy of a place beside iron, Peruvian bark, and mercury. We ought to lose no time over the symptoms of rickets; slight catarrh, diarrhœa, paleness, a tendency to fits, these will all disappear under cod-liver oil: give expectorants, purgatives, styptics, and the rickets will increase under our eyes; nay, occasionally, it will even develop '*de novo*' while a child is being treated for coughs, deranged bowels, and other apparently simple disorders."

Art. VI. *Surgical Cases, Devon and Exeter Hospital*, by PHILIP CHILWELL DELAGARDE.—Mr. Delagarde's papers, which are continued in the successive volumes of the Reports, always contain a considerable amount of material of intrinsic importance and interest. We have not been quite so favourably impressed with the present instalment as with its predecessor, the tone of the author's remarks being occasionally not quite so modest as might be desired. Forty-two cases are detailed in the present paper; epithelial cancer, plastic operations, amputations, hydrocele, tumours, loose cartilages, resections, diseases of bone, ligations of arteries, congenital deficiency of womb, and rupture of the bladder being among the subjects discussed. If the editors had thought proper to append an index to the volume, these cases would become widely known and would be frequently referred to; as it is, however, they will quietly sink into that oblivion which surrounds all unindexed periodical literature. Mr. Delagarde's paper is distinguished by containing the solitary lithographic plate of the volume.

Art. VII. *Cases of Herpes Ophthalmicus*, by BOWATER J. VERNON.—Five cases of this curious affection are detailed, and the views of Mr. Hutchinson and Professor Stellwag von Carion respectively referred to. "In investigating my own cases," says Mr. Vernon, "I have borne in mind the points upon which stress has been laid by Mr. Hutchinson, and especially the diagnosis between the disease and erysipelas, the limitation of the eruption to certain nerve territories, and the unexplained fact that the eye itself is only involved when the eruption appears in the track of the nasal branch of the fifth nerve—at least one of my cases affords an exception to this and another seems to show that nerves of sensation are not the only nerves which suffer, inasmuch as a motor nerve, the third, was undoubtedly affected, so much so as materially to interfere with vision, and though frequent examinations were made and no structural changes in the fundus were recognized, it is probable that some changes were taking place."

Art. VIII. *On Lithotomy and Lithotripsy*, by HOLMES COOTE.—This is a short, but very well reasoned and eminently practical paper, on the respective advantages and disadvantages of the operations to which it refers. It does not profess to give a summary of what other authors have written on the subject, but principally deals with the general experience gained in the wards of St. Bartholomew's during the last twenty-five years.

With perhaps the exception of herniotomy, there is no operation which the student looks upon with more awe than upon lithotomy. Every text-book and every lecture upon the surgical anatomy of the male perineum, presents such an array of information to be acquired concerning deep and superficial layers of muscles and reflexions of fasciæ, as to the ordinary intellect is positively appalling; and the student ingenuously supposes that the practised lithotomist has

all these arranged in his memory in as orderly a manner as the scoops and forceps in his tray. Hence the following sentences of Mr. Coote's are positively refreshing, conveying as they do, a fact which we acknowledge in our own minds, though it is not the fashion to confess it: "In this part of the operation" [when the membranous portion of the urethra has been opened] "the surgeon should dismiss from his mind the minuter points of anatomy connected with the study of the perineum. It is to him a matter of absolute indifference whether he divide the transversalis perinei muscle, the neighboring arteries, or the anterior fibres of the levator ani. He knows that first he must strike one structure with certainty, namely, the membranous portion of the urethra; and secondly, that he must make a sufficient opening into the bladder through the prostate, without wounding the pelvic fascia, and in most cases this is effected as much by stretching as by cutting, and with far greater safety to the patient."

With regard to the alleged freedom from risk of lithotripsy as compared with lithotomy, the following paragraph may be quoted: "That the dangers from lithotripsy are not wholly imaginary may be inferred from the statistics of the hospital. It appears that the mortality from this operation is as high as 33.33 per cent., while from lithotomy it is only 18.75. But here we must correct an error, for, if the young under twenty years are withdrawn, the mortality after lithotomy is often above 50 per cent."

Art. IX. *Contributions to Cerebral Pathology*, by WILLIAM S. CHURCH, M. B., Oxon.—This is quite an elaborate paper, giving more or less full details of thirty-four autopsies made in the post-mortem room of St. Bartholomew's hospital during fourteen months, ending July, 1868. Ten cases were of apoplexy, fourteen of tuberculous meningitis, one of intracranial aneurism, and the remainder of cerebral abscess or of other affections generally secondary to disease of the skull, of acute meningitis, of cerebral cancer, of cerebral syphilis, and one very curious case of embolism of the left middle cerebral artery. The following remarks upon tuberculous meningitis we quote for the benefit of our readers: "An examination of the few cases here recorded, though not furnishing sufficient material for proving any pathological view, affords, I think, ample ground for declining to accept the one put forth by Professor Empis, and others, that 'La Granulie' is a disease by itself, frequently coexisting with tuberculosis, but distinct and capable of separation therefrom, not only by pathological changes recognizable after death, but even by clinical symptoms present during life. The cases here recorded show also, what is often lost sight of, that tubercular meningitis is by no means confined to childhood or early youth; four out of the fourteen occurring in persons over 25, three between 20 and 25, and five in children under 10. One only of the number could be said to have had phthisis; in none of the others had the lung tubercle, when present, commenced to soften."

Art. X. *Notes on Diseases of the Joints, based chiefly on Cases that have occurred in the Hospital during the present year*, by F. HOWARD MARSH.—Mr. Marsh first gives five cases in which the knee joint was opened either by the surgeon's knife or by accident, and in which recovery followed, and adds four more in which dissections of joints after amputation showed a considerable advance in the process of repair due to nature's unaided efforts. These cases, he thinks, "are sufficient to show that there is no essential deficiency of reparative power in the structures that form joints," a proposition which we should think in the present state of surgical science scarcely required demonstration. Five more cases are given to illustrate the "value of continuous extension by means of a weight in the treatment of joint disease." That this is an excellent mode of treatment can, we think, admit of no doubt; but surgeons, in this city at least, will be surprised to hear it recommended as a novelty, for it was one of the traditions of Pennsylvania Hospital practice, fully nine years ago, and was even then not considered particularly new.

Mr. Marsh terminates his paper with some remarks upon hip disease, concerning which he seems to take the old view that it is a constitutional ("strumous") affection, though of course to be treated principally by local appliances. We have so recently considered this subject in reviewing Mr. Holmes' work on the *Surgical Treatment of Children's Diseases*, that we shall not revert to it

here, but refer our readers to the review in question. [See No. of this Journal for Oct. 1868, p. 469.]

Art. XI. *Surgical Cases*, by THOMAS S. H. JACKMAN.—Three cases are given: one of rupture of the popliteal artery, followed by mortification of the leg, amputation and recovery; one of strangulated inguinal hernia returned "*en masse*," operation and recovery; and one of fracture of the tibia and rupture of the anterior tibial artery, requiring as in the first case amputation, and followed by recovery. These cases are well told, and are of considerable interest.

Art. XII. *A Case of Œsophagotomy*, by ALFRED WILLETT.—Mr. Willett begins by referring to Mr. Cock's first case of pharyngotomy, but is seemingly unaware of the second operation by the same gentleman, published in the last volume of *Guy's Hospital Reports*, and noticed in the number of this journal for October, 1868, page 475. Mr. Willett's case was one of malignant stricture of the Œsophagus, and the patient survived the operation for eighteen days. Mr. W. recommends that the gullet should be opened at a point on a level with the cricoid cartilage, where the operation is easier of performance than at any other point.

Art. XIII. *On the Molluscum Contagiosum of Bateman*, by DYCE DUCKWORTH, M. D., Edin.—In fourteen pages, Dr. Duckworth has succeeded in condensing a great deal of valuable information about this unpleasant affection. In four cases which came under his own observation, the evidence of contagion seems to have been very clear, and his conclusion is apparently justifiable that there are, in fact, two kinds of molluscum, one contagious and the other not. The cases where supposed common warts are communicated by contact are really, in the opinion of Dr. Duckworth, instances of molluscum contagiosum.

Art. XIV. *Case of Elephantiasis Arabum successfully treated by Ligation of the Superficial Femoral Artery*, by T. SYMPSON.—The patient was a female aged forty-one, whose disease began when she was ten years old, though it had only been troublesome since the age of twenty-five. Three months after the operation (when the report closes), the circumference around the calf of the affected leg had diminished an inch and three-quarters, and the patient walked with the support of a bandage. We think it but right to say that three months is, in our opinion, too short a time to have elapsed to justify Mr. Sympton in claiming his operation to have been brilliantly successful.

Art. XV. *Miscellaneous Ophthalmic Cases*, by BOWATER J. VERNON.—This paper gives details of five interesting cases, as follows: (1) Protrusion of the eyeball removed by the extraction of a decayed tooth; (2) Paralysis of the sixth nerve on each side, after an injury of the head; (3) Erysipelas of the face—suppuration within the orbits, amaurosis on the left side; (4) Urticaria—erysipelas of the face, protrusion of the right eye from suppuration within the orbit, temporary blindness; and (5) Erysipelas of the face—suppuration within the right orbit, complete amaurosis on this side.

Art. XVI. *Cases of Masked Hernia, and other Cases*, by GEORGE W. CALLENDER.—Mr. Callender refers to the fact that in some cases of strangulated hernia a portion only of the circumference of the bowel is engaged, and believes that these cases may run on to a fatal termination without any of the ordinary symptoms of strangulation being manifested during life. Several cases are adduced in illustration of this point. We are not prepared to subscribe to Mr. Callender's doctrine that in cases of fecal fistula where the entire calibre of the bowel has been lost, it is absolutely impossible that a cure should ever be effected by Dupuytren's operation or by any other, though we doubt not that such cases will always be found more intractable than where a portion only of the intestinal wall has been lost.

Several interesting cases of herniotomy or of exploratory operations for suspected hernia are added, with many useful hints as to the management and especially the after-treatment of cases of strangulated hernia. Mr. Callender considers it important always to leave open a small portion of the herniotomy wound, so as to allow of drainage. Omentum, if positively gangrenous, should be cut away; under other circumstances it should be left in the wound, and should almost never be returned into the abdominal cavity. This whole paper is worthy of attentive study by practical surgeons.

Art. XVII. *Notes suggested by some of the Specimens that have been added to the Museum in the course of the year.* by F. H. MARSH.—The greater portion of this paper is occupied with an account of "loose cartilages," which Mr. Marsh describes as being of six varieties, most of these being represented in the museum of St. Bartholomew's. The remaining portion of the paper describes the following specimens, viz.: chronic rheumatic arthritis of the shoulder-joint, separation of the acromion process; abscess in the hip-joint, separation of the head of the femur at the epiphyseal line; malignant disease of the sigmoid flexure, rupture of the large intestine from extreme distension; strangulated femoral hernia, perforation of the intestine by a piece of bone that lay in its canal in the hernial sac; keloids in the lobules of the ears, following the use of ear-rings; congenital hypertrophy of the toes; fatal hemorrhage from a blood cyst in the broad ligament; and finally, a large calculus from the female bladder, particularly interesting on account of its unusual size, and from the fact that it was removed by rapid urethral dilatation, the patient rapidly recovering and not suffering from incontinence of urine.

Art. XIX. *A Brief Historical Sketch of the "Abernethian," some time known as the Medical and Philosophical Society of St. Bartholomew's,* by ROWLAND H. COOMBS.—This is an interesting retrospective sketch of the third in age of the Students' Medical Societies of Great Britain. It was founded by Mr. Abernethy in 1795, having been anticipated by the Guy's Physical about 1775, and the Edinburgh Medical in 1735. Beside the name of its illustrious founder we find on the roll of the Abernethian those of Macartney, Haslam, Brodie, Lawrence, Samuel Cooper, Hodgson, Stanley, Latham, Kirkes, Crosse, and others, now deceased, with those of many eminent physicians and surgeons still living, who occupy important positions in contemporaneous medical history.

Art. XX., and last, gives the *Hospital Statistics* for the current year, arranged, as usual, in tables and sub-tables, convenient for reference. These statistics are of much value, and will prove of great use to students and writers in future years.

We have thus concluded our examination of the fourth volume of *St. Bartholomew's Hospital Reports*, which we regret that we cannot commend as highly as we did its predecessor. We are sorry to observe that of twenty gentlemen who constitute the professional staff of the Hospital, but seven have contributed to this volume, and that even these seven have furnished an aggregate of less than 100 pages. We need scarcely say that this is not the way to make the *Reports* successful. We cannot believe that any physician or surgeon in his year's service at St. Bartholomew's does not meet with something worthy of publication, and we must think it a subject of regret that every medical officer of the hospital does not take sufficient interest in the *Reports* to make them his medium of communication with the public.

We have again to repeat our annual complaint (*semper lugens*) that the volume contains no index. By persistently neglecting this important matter, the editors inflict a great injury upon both their writers and their readers.

J. A., JR.

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ART. XXVI.—*How to Work with the Microscope.* By LIONEL S. BEALE, M. B., F. R. S., etc. Fourth edition, containing upwards of 400 engravings, many of which have been drawn upon wood by the author. 8vo. pp. 383. London: Harrison, 1865.

A new edition of this popular and useful work, so soon after the issue of the third (1866), is an agreeable surprise; and containing, as the present volume does, so large an amount of new material, truly commands for its author the

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<sup>1</sup> See an interesting paper by Dr. Geo. W. Norris (with lithograph) in *Trans. Coll. Phys. Phila.*, vol. iii. pp. 93-95, and another by Dr. Alfred Stillé, in *Proc. Path. Soc. Phila.*, vol. ii. pp. 60-61 [*Am. Journ.* for Jan. 1861, pp. 143, 144.]



thanks of the working profession as well as of students. Intended mainly "to instruct learners in microscopical manipulation, and in those operations which are essential to the successful demonstration of form, structure, and colour under the microscope," the objects are faithfully attained. It is interesting to know that the importance of ocular demonstration in medical and other scientific lectures, so urgently insisted upon by Dr. Beale, is beginning to be appreciated among us—that physiological and pathological lectures, at least, are being illustrated by the microscope, as well as by appropriate diagrams, and that workers in various directions of microscopic inquiry, of whom there is no mean number in our city, are beginning to concentrate their labours for mutual advantage in the organization of a microscopical society.

As we are not aware of any American notice of the third edition of this work, and many years have intervened between the second and third editions, we will present an outline of the scope of the present volume.

Part I. contains a succinct description of the microscope and accessory apparatus, with no reference to the theory of its construction, or details concerning the special mechanical arrangement of the instrument. These are left for the many excellent English, Continental, and American works already extant. The binocular microscope, as improved by Wenham, for use with powers as high as a  $\frac{1}{4}$ th objective, and adapted by Powell and Lealand, Mr. Tolles and Prof. Lawrence Smith, of this country, for the highest powers, is briefly described, but, by the aid of excellent diagrams, rendered clear. It must be remembered that in the binocular instrument of Powell and Lealand there is really no stereoscopic effect, and the only advantage gained is the diminished fatigue consequent on the use of both eyes instead of one.

The horizontal, clinical, or class microscope, contrived by Dr. Beale, has greatly facilitated illustrative teaching, though, after experience with both, we consider the improved form of Mr. Jos. Zentmayer, of this city, more convenient for teachers and students. He has adapted an *independent stage and rack adjustment* for focus. The essential feature of these clinical microscopes is in this, that by an appropriate arrangement of direct light from a small lamp, they may be passed around a large class. In this way Dr. Beale has been enabled to show twelve preparations variously magnified, to a class of one hundred or upwards, in an hour's lecture. Any objective may be used with these instruments. Dr. Beale has used a  $\frac{1}{2}$ th, and we constantly use an  $\frac{1}{4}$ th with great comfort, and feel certain that higher powers may be used with facility; the light is ample, without condensation, for a  $\frac{1}{10}$ th.

Apparatus for illumination of objects, for drawing, engraving, and measuring, cells, cements, and preservative fluids, are also fully treated of in this section. We have referred elsewhere to the importance attached by Beale to careful drawings made by the observer to illustrate his descriptions.

Part II., on preparing and preserving tissues for microscopic examination, includes many valuable suggestions and precautions. A general law, the neglect of which occasions many discrepancies in the results of observers, is this: *to modify the method of investigation according to the degree of transparency or opacity, refractive power, density and chemical composition of the specimen.* The importance of this law is amply illustrated in the different appearances of crystals as examined in air, water, or Canada balsam, by transmitted, reflected, or polarized light; or, again, in the effect of glycerine and acetic acid upon so-called white fibrous tissue, the effect of both of which is to destroy all appearance of structure, and thus cast doubt upon the assumed fibrous arrangement.

The preparation of thin sections of hard and soft tissues, the separation and examination of deposits from fluids, and injections are here considered. Next to injections, no methods of preparation have so largely contributed to our knowledge of the microscopic structure of tissues as those of *staining*. Beale's method, by the ammoniacal solution of carmine, is so readily applied that it recommends itself in the most ordinary microscopical study. A difficulty is sometimes met in securing the staining of the germinal matter. To understand and be able to correct this, it must be remembered that its success depends upon the acid reaction which is one of the properties of germinal matter after death. The carmine, being held in solution by the alkali, is precipitated as the

latter is neutralized by the acid. The author tells us, "if the solution be very alkaline, the colouring will be too intense, and much of the soft tissue, or imperfectly developed material around the germinal matter is destroyed by the action of the alkali."

The latter is undoubtedly true, but if the *rationale* of the process of staining be correct, it appears to us the facts should be these. If the alkalinity is very great, and the acidity of the germinal matter insufficient to counteract it, no deposit should take place in the latter, supposing no evaporation to take place, as we believe is presupposed. For, in the event of evaporation of the solvent of the carmine, the latter must be deposited wherever it may be; and we consider this to be one method of accounting for the universal staining of germinal matter and formed material which takes place occasionally. The staining is often hastened by the addition of a little more water or alcohol. This is also amply explained by the supposition that the solution first used is too alkaline to be neutralized by the weak acid; though it is also well known that the addition of alcohol to any solution increases the permeating power of such solution without regard to chemical composition. This fact is made use of in the process of photography. If, on the other hand, the solution be barely sufficiently alkaline to hold the carmine, the slightest acidity in the germinal matter or formed material will throw it down; and thus again we have accounted for the general staining which sometimes takes place. Whatever may be the mode of accounting for this staining of the nucleus or germinal matter, nothing seems more certain than that some difference must exist in the chemical or physical nature of the two substances, of which one is untouched by the colour, while the other is deeply dyed, though the same solution is applied to both. Although Dr. Beale prefers his own method of staining, yet he gives those of others sufficiently explicitly to enable them to be followed by those who desire it. Other substances used for staining tissues are borax and carmine, producing a lilac colour, aniline colours, blue colours, produced by indigo carmine, and soluble aniline blue, tannin, solutions of nitrate of silver, chloride of gold, osmic acid, and others.

In this part are also introduced methods of demonstrating the structure of the most important tissues of the higher animals, with some reference to their general characters, which were originally given in the first and second editions of *The Microscope in Medicine*, and with regard to the omission of which from the last edition of the latter volume, we took occasion to express regret in a former notice. They are well introduced here, however, and increase very greatly, in their improved and extended form, the utility of the book to the practical student. They include areolar (connective) tissue, white fibrous tissue, yellow fibrous tissue, adipose tissue, cartilage, bone, muscle, arteries and veins, capillaries, nerves,<sup>1</sup> organs of digestion and absorption, of circulation, of respiration, of secretion, and of innervation.

In Part II. are also introduced over one hundred pages of new matter on the manner of collecting, keeping alive, and examining the lower animals, and on the demonstration and preservation of vegetable structures and minerals, including crystalline forms, coal, iron, and fossils. The book becomes thus of much more general utility than previous editions.

Very important are the remarks, which conclude this part of the volume, on drawing inferences from observations, recording the results of microscopical observations, and fallacies to be guarded against in microscopical investigation. The evils resulting from hasty inferences and carelessly recorded results, can only be appreciated by those who are actually striving for light in the existing maze of conflicting evidence: "Three or four views are taught concerning first principles of anatomical and physiological science, each one being quite incompatible with the rest, but nevertheless supported by an immense amount of what *purports* to be evidence based upon observation. It is obvious, in such a case, that many of the statements must be false, and many of the facts advanced must be errors; and yet with what pertinacity are they maintained, and what

<sup>1</sup> Beale's latest views with regard to nerves have been embodied in a notice of some other of his writings, to be found in the number of this Journal for Oct. 1868.

an amount of work must be done, and what a length of time must elapse, before the false facts can be demonstrated to be really false, and the true facts proved to be really true! Years must be passed in patient investigation before a man can expect to be able to trust himself as an observer of facts, and it is only by careful and unremitting exercise that he will gradually acquire habits of attentive observation, and the power of thoughtful discrimination, which can alone render his conclusions reliable. Indeed, though he labour hard and earnestly, he will scarcely have properly educated himself ere his powers begin to decay, and he become liable to err from the natural deterioration in structure of the organs upon which the observation of his facts entirely depends." p. 189.

Very different, we are quite certain, is the practice of the majority of observers who publish their results, and though a strict adherence to the line marked out by Dr. Beale would discourage many students from commencing their labours, and greatly diminish the number of workers and published results, yet such as would be put forward would be little apt to mislead us, would reflect greater credit upon their authors, and would diminish the amount of valuable time lost in the perusal and refutation of imperfectly observed facts and ill-founded reasoning.

Fallacies to be guarded against, and errors of observation, so liable to mislead the young observer, and yet so easily obviated by the intelligent student, if he is early made well aware of them, are here plainly presented, and accompanied by illustration in such way as to make it easy to recognize them.

Part III., on Chemical Analysis applied to Microscopical Investigation, than which nothing has contributed more largely to our knowledge of physiology and pathology, is properly reproduced from the last edition of the *Microscope in Medicine*; for although we have always contended that the two books of Dr. Beale should be complementary, yet this subject is so important, and additions to it so numerous, that it is well duplicated, that it may be more accessible.

The most important addition to this subject is a new and sufficiently full paper on the subject of "Spectrum Analysis," by H. O. Sorby, F. R. S., who was the pioneer in the application of spectrum analysis to microscopic investigation, and therefore well qualified to prepare the paper, which of all others shall become the guide of students.

Spectrum analysis, as applied to the microscope, is carefully distinguished from that branch of the subject which has yielded such admirable results in the hands of Bunsen, Kirchhoff, and other physicists. "In that method it is the number and position of the narrow bright lines or bands into which the light of the incandescent body is divided by the spectroscope, that enable the experimenter to identify each substance. It is, in fact, the analysis of the *emitted* light; whereas in spectrum analysis applied to the microscope, it is the analysis of light which has been modified by transmission through the substance under examination, and it is the *absence*, and not the presence of particular rays, which makes the spectra characteristic of different substances. In this respect it is more analogous to spectrum analysis as employed in studying the chemical nature of the atmosphere of the sun or stars, as illustrated by the researches of Kirchhoff, Miller, and Huggins; but the principles involved are materially different. The absorption bands, in such cases, are narrow, sharply defined lines, characteristic of absorption by gases; whereas those which play such an important part in researches with the spectrum microscope are usually broad, gradually shaded off on each side, and only in a few cases so narrow and sharply defined as to vie with some of the broader dark lines in the solar spectrum." (p. 238.) The above quotation conveys an adequate idea of the principle upon which the whole subject of spectrum analysis by the microscope is based. The means of accomplishing the end are somewhat varied. It is, of course, analysis of the qualitative kind, and the object of our researches may be said, in a word, to be to *distinguish substances by colour*, and, as such, is not confined to spectrum analysis. It may, however, be said to be the most accurate and scientific application of it. The micro-spectroscope, according to the plan of Mr. Sorby, consists of an eye-piece arrangement fitting into the tube of the microscope, and having the upper lens or eye-glass achromatic. At the focal

point of this lens, between the eye-glass and field-glass, is inserted a narrow slit, which can be made broader or narrower by a lateral screw. A small rectangular prism is fixed so as to extend over about one-half of the slit, and to reflect the light coming laterally through an aperture in the side of the eye-piece. The other half of the slit transmits the rays coming up from the object through the object-glass and main tube of the microscope. When arranged and illuminated, on looking through the eye-glass, a narrow line of light can be seen, one-half the length of which has passed through an object placed on the stage of the microscope, and the other half through any other object placed on a stage, provided at the opening in the side of the eye-piece. If the prism has been perfectly adjusted, these two portions should appear perfectly continuous; but if not, the line appears broken at their junction, and would give false results if the spectra were compared. The compound analyzing prism, consisting of two rectangular prisms of *flint* glass, corrected for refraction by one rectangular prism of *crown* glass, and two others with angles of 75 degrees, fits over the eye-piece like a long cap. This, according to Mr. Sorby, gives a proper amount of dispersion, while the amount of light, as well as the length of the slit, is regulated by the lateral screws applied to the disk carrying the slit.

In using the spectroscope, as a general rule, the slit should be of such width as to show indistinctly the Fraunhofer lines, while the lateral opening in the eye-piece should generally be of such width as to make the two spectra of equal brilliancy. Modifications in both must, however, be made in accordance with the intensity of the light used, and the nature of the object under examination. In all cases no light should pass up the tube of the microscope which has not passed *through* the substance under examination; because unmodified light, passing on each side of the object, is reflected from the front of the object-glass down on the object, and back again through the lenses without traversing its substance, producing, in this manner, an entirely false spectrum, especially if the substance is dark. This can be obviated by fitting over the object-glass a tube having a stop at the end with a hole in the centre of such width as not to limit the field of the microscope, and placed at such distance as to be within the focal length—so as to approach but not to touch the object when in focus. For  $1\frac{1}{2}$  inch object-glass the opening should be about  $\frac{1}{16}$  of an inch.

When properly arranged, if nothing intervenes to interfere with white light employed for illumination, a simple and continuous spectrum is seen, with all the colours from extreme red to the extreme blues, while, of course, by the interposition of colourless bodies no effect is produced. But coloured bodies by obstructing certain rays and not allowing them to pass forward as light, produce black or absorption bands which are of different width and occur in different situations in the spectrum, with different substances; thus, fresh blood gives two well defined absorption bands in the upper part of the green.

Having described in some detail the apparatus constituting the micro-spectroscope, and the general principles of its use, we refer the reader to Mr. Sorby's paper in this volume, in the *Proceedings of the Royal Society* (1867, vol. xv. p. 433), and to the *Quarterly Journal of Science*, vol. ii. p. 198, for its special application. Suffice it, that its recent application to medico-legal questions makes it important for every medical man to familiarize himself with its use. As yet, we know of no microscope makers in this country who have prepared the apparatus, but we trust that a sufficient demand may soon justify its construction, so simple and easy of application are the principles on which its utility is based.

Part IV., on taking photographs of microscopic objects, has been carefully revised and extended by Dr. Maddox, some of whose admirable photographs have reached this country. It is needless to say that a subject so important as this, the real value of which, however, has not yet been determined, in medical teaching, at least, is well commended to one so experienced as Dr. Maddox. We shall not pretend to give even a condensed summary of the paper, but refer the reader to the book. We are not aware of any more ample or precise directions on the subject than will be there found. It should not be omitted that the most gratifying acknowledgment is made of the successful efforts in this direc-

tion by Drs. Woodward and Curtis, at the Army Medical Museum, Washington. An extract is given from p. 149, Circular No. 6, November, 1865, with a view "to show the activity and usefulness of the department by which it is issued," and the credit which attaches "to those who performed the work, and to the government which sanctioned and encouraged its prosecution;" while a detailed account is given in the body of the work of Dr. Woodward's method, and in the appendix, of Dr. Woodward's more recent *improved* arrangements for taking photographs of microscopic objects.

Appreciating, as we do, most highly, the advantages which have been derived in a variety of ways, from micro-photography, and admitting its entire success in the demonstration of objects best seen under low powers, we nevertheless venture the statement that we cannot in the present state of the photographic art, conceive it possible for micro-photographs successfully to substitute accurate drawings of certain objects, more particularly physiological and pathological tissues, requiring high powers for their examination. We say *certain* objects, for there are others exhibiting fixed markings, such as diatoms, and even blood-corpuscles, spermatozoids, cartilage-corpuscles, and other organized substances where structure is less characteristic than outline, from which entirely correct notions may be obtained by photographs with high powers, as Dr. Woodward has amply shown. And although it may be possible that "the time has arrived when the inability to photograph alleged markings will throw doubts on the correctness of the observers who have supposed they saw them;" yet we think the time is still distant when the inability to photograph alleged terminations of nerve-fibres on the sarcolemma of muscular fibres, or the termination of nerve-fibres in plates within the sarcolemma, will throw doubt upon the correct observation of the investigator. The importance and actual necessity of "transitional focussing" in obtaining a correct appreciation of structure in the use of high powers is appreciated by every worker with the microscope. And when we recollect that it is impossible to obtain more than a correct representation of a single stratum or surface layer by means of the photograph, it will not be difficult to estimate the obstacles to success. Would it have been possible for Dr. Beale to have reproduced the appearances so admirably illustrating his various papers in the Proceedings of the Royal Society and largely repeated in the volume before us, by means of a photograph? We fear not. We do not wish to be considered as underrating the results of micro-photography, for they have been truly wonderful, yet we must be on our guard, lest in our ardour we accept the interpretation of photography with its single surface picture, for what can only be attained by a careful comparison of different strata of a tissue and the relation which may exist between them.

In Part V. Dr. Beale renews his plea for the use of high powers, and proves their absolute necessity in attempting the solution of the problems presenting themselves to the physiologist. The candid observer needs but to read his apology for the use of very high powers to be convinced of this.

The "new method of preparing specimens for researches with the aid of the highest magnifying powers yet made" is here introduced, and is probably familiar to most of the readers of this Journal. The principle lies in this belief of Dr. Beale, that much more minute structure can be demonstrated in tissues impregnated with such viscid media as syrup and glycerin, than can be shown in water or serum.

Concluding this part of the volume is a new summary by the author of his own views upon the structure, formation, and growth of tissues. This will be very useful to those desiring a succinct account of these views. They have already been given at length in this Journal [No. for Jan. 1867, page 191], and require at present no further notice.

Here are also presented the conclusions to which Dr. Beale has arrived in connection with the structure and arrangement of nerves, all of which, as has been stated, are embodied in a notice to be found in the October number of this Journal, for 1868, of his recent researches as published in the *Proceedings of the Royal Society*. A large number of the admirable illustrations accompanying these papers are reproduced in this edition of *How to Work with the Microscope*, and thus become more accessible than when in the quarto form. Too much credit

cannot be given to Dr. Beale and his publishers for the very handsome manner in which the typography and drawing are executed. The very superior quality of the paper contributes largely to this effect. It is to be regretted, however, that the first cost of these books, already more than it ought to be, should be further increased by the necessity of new binding, a characteristic defect of English books, whatever their merits. J. T.

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ART. XXVII.—*The Transactions of the American Medical Association.*  
Instituted 1847. Vol. XIX. 8vo. pp. 497. Philadelphia, 1868.

THE nineteenth annual session of the Association, held at the city of Washington, May 5th, 6th, 7th, and 8th, 1868, was opened by a very able address from the President, Dr. S. D. GROSS.

The first report upon a subject of general interest to the profession, and not less so to the community at large, is that of the Committee on Medical Education, presented by its chairman, Dr. A. B. PALMER, of Michigan. It is replete with sound sense, while its suggestions throughout are of a strictly practical character. Were they adopted and carried out in good faith by all our medical schools and private medical preceptors, it would, we feel assured, tend greatly to extend the knowledge, elevate the character of their graduates and pupils, and better fit them for an entrance upon their career as medical practitioners.

The report of the Committee on Medical Literature was presented through its chairman, Dr. GEORGE MENDENHALL, of Ohio. Notwithstanding the many obstructions which have stood in the way of any very rapid advance towards completeness in the medical literature of the United States, the chief of which are briefly referred to in the report, we may, nevertheless, well congratulate ourselves on the position of American medical authorship. "The year 1868 has, thus far, exhibited a gratifying increase in the publication of valuable works by domestic as well as foreign authors. This fact looks well for the reading disposition of the profession, and is in striking contrast with the demands at the time this Association was formed." The notices, appended to the report, of the more recent publications in the different branches of medicine, are brief and scarcely complete. Of many of the works which have appeared during 1867 only a bare catalogue is given.

The reports next in order are those from the different sections. The first of these is from the Section on Chemistry and Materia Medica, Dr. J. E. MORGAN, of the District of Columbia, chairman. Before this section came the report of the Committee on the Culture of Cinchona, by Dr. J. M. TONER, and the Association passed resolutions directing a memorial to be presented to Congress, praying that measures may be adopted to promote the cultivation of cinchona plants in the United States.

Next follows the report of the Section on the Practice of Medicine and Obstetrics, Dr. R. R. MCLLVANE, of Ohio, chairman. Dr. J. P. GARRISH, of New York, read before the section a paper on "Tsa-tsin, or Rhynchosa Excavata," as an agent of value in amenorrhœa and dysmenorrhœa.

The report of the Section on Psychology, Dr. D. F. CONDIE, of Philadelphia, chairman, comprises two most interesting papers. The first, on "Insanity," by Dr. C. A. LEE, of New York; and the second, on "Provision for the Chronic Insane," by Dr. J. B. CHAPIN, of New York. Dr. L.'s paper is well deserving of a careful study. In the report by Dr. C., in respect to the chronic insane, we are presented with a very forcible plea for those who are the subjects of chronic insanity, especially when it occurs among the indigent classes of society. The suggestions of Dr. C. as to the proper provision for the chronic insane, especially such as, in consequence of the poverty of themselves and friends, must necessarily be cared for by the public, are throughout sound and practical.

The report of the Section on Meteorology, Medical Topography, and Epidemics, Dr. B. N. CATLIN, of Connecticut, chairman, contains a number of communications, most of them of great interest, and comprising a series of facts

available to the medical etiologist in his investigation into the predisposing and exciting causes of disease. The first of these communications presents a tolerably full report of the topography, climatology, and epidemic diseases of West Virginia, by Dr. E. A. HILDRETH. The brief remarks of Dr. H. on the epidemics that have of late years prevailed in West Virginia, and on the usual endemic and sporadic diseases of the State, are concise but full of interest. The report of Dr. H. comprises, also, a very good sketch of the topography, geology, hydrography, climate, and the soil and productions, etc., of the portion of country included within the limits of West Virginia.

Next follows a description, by Dr. THOS. ANTISELL, of the climatology and epidemics of the District of Columbia. Though but a short one, the account given by Dr. A. is not devoid of interest and instruction.

The next communication, by Dr. T. J. HEARD, of Galveston, is in reference to the medical topography, meteorology, and epidemics of Texas. The larger portion of this paper is occupied by a notice of the yellow fever as it appeared at different parts of the State during its prevalence as an epidemic in the year 1867. The notice is a very excellent one, but, it cannot be said to present any very important addition to the knowledge we already possess in respect to its pathology or treatment.

A sketch is next given of the "Diseases of Pennsylvania," prepared by Dr. CONDIE. It is a mere outline, and imperfect in many points of view. It is correct, however, so far as it goes. Its value and interest would have been increased had it been possible to obtain an account from every portion of the State of the nature and extent of the diseases there prevailing, whether endemic, epidemic, or sporadic; the age, sex, domestic condition, and occupations of the persons most liable to be attacked; the percentage of mortality of each disease, with its ratio of mortality in different localities, at the different periods of life, in the two sexes, and according to the different conditions and occupations of the patients. To obtain such statistics in a series sufficiently extensive to serve as a basis for safe conclusions is in but few of the States at the present day possible; nor will they ever be obtained until in every portion of each State the registration of all the deaths that occur, with the particulars connected with each, shall be required by a judicious law, rigidly enforced.

Dr. JOHN C. PETERS, of New York, gives an account of the conveyance of cholera from Hindostan, through Asia, to Europe and America, illustrated by four maps. We do not find in it anything new.

Dr. WM. FAULDS THOMS, of New York, communicates a "Series of Plans for the Collection and Statistical Arrangement of Facts in regard to Climatological and Sanitary Conditions of the various States." These plans, were they to be generally adopted and properly filled up, would enable us to trace the comparative influence of the facts collected and arranged in them in the production of epidemics.

Besides the papers reported for publication by the Section on Surgery and Anatomy (Dr. J. L. ATLEE, of Lancaster, Pa., chairman), there appears upon the minutes of the section a communication read by Dr. J. H. PACKARD, of Pennsylvania, presenting a series of rules, with illustrations, indicating "the course to be followed by the bystanders in case of railroad injury, when surgical assistance cannot be at once obtained." These it is proposed to have conspicuously displayed in freight stations and other places accessible to railroad employees, and, not being copyrighted, can be duplicated by physicians located in manufacturing districts or along the routes of railroads.

A male 52 years of age, affected with an enormous aneurism, supposed to be of the arteria innominata, was presented to the section by Dr. POST, of New York.

Dr. P. F. EVE, of Tennessee, presented a treatise statistical in character, and containing several illustrations in water-colours, entitled "Investigations upon Pyæmia, with Observations upon Associated Diseases, supervening on Gunshot Wounds," by Dr. JOSEPH JONES, of Tennessee, which was referred to the Committee of Publication, with directions to bring it to the notice of the Medical Department of the U. S. Army.

The first of the papers reported by the section for publication in the *Trans-*

*actions* is the "Report of the Committee on Ophthalmology," by Dr. J. S. HILDRETH, of Chicago, Ill. The report professes to present a concise outline of the onward march of ophthalmology as a science and as an art, and its present condition in Europe and this country. The outline is superficial and unsatisfactory.

The next communication is a most able and instructive one, worthy of a careful study, by Dr. L. A. SAYRE, of New York, on the "Treatment of Club-Foot without Tenotomy." It would be no easy task, if not an impracticable one, to present any intelligible account of the author's plan of treatment without the aid of the illustrations with which the paper is so profusely supplied.

A communication from Dr. GURDON BUCK, of New York, follows, giving a description of "a new method of reconstructing the lower jaw after its removal for disease; illustrated by two cases of epithelioma." To understand the method pursued by Dr. B. in the cases of which he gives the history, it is necessary that these be studied in connection with the illustrations which accompany them.

Dr. I. N. QUIMBY, of New Jersey, describes, in the next paper, a "new method of treatment of congenital talipes." We must refer such of our readers as desire to make themselves acquainted with this plan to the communication of Dr. Q.

Dr. L. ELSBERG, of New York, in the next communication, advocates the treatment of syphilis by hypodermic injection." The advantages he ascribes to this plan of treatment are—1st, the rapidity with which it causes the syphilitic symptoms to disappear; 2dly, the certainty of success; 3dly, the relative rarity of recurrences under its use, or, if they do happen, their little severity.

In the next paper, by Dr. PAUL F. EVE, is described a "safe and effectual operation for the radical cure of varicocele." The operation is thus performed: The patient being etherized, the scrotum over the left testicle, previously denuded of hair up to the external abdominal ring, is so secured by the thumb and fingers of the left hand, or, still better, by Ricord's fenestrated forceps for phymosis, but double their length in the blades, that about four square inches of it is excised by a knife, and without opening the tunica vaginalis. Before detaching the forceps, *pins* are to be inserted through the integuments near the cut edges, around these the figure-of-8 sutures are subsequently applied. Beginning with these at the most pendent part of the scrotum, and ascending towards the cord; when the latter is reached, the veins are carefully examined, if found much enlarged, they are to be separated from the vas deferens and spermatic artery, and an *animal* ligature tied around them just sufficiently tight to arrest the circulation. The entire wound is then closed accurately by the twisted suture. Two weeks generally complete the treatment; they are often up, however, in a week. The patients are to be carefully prepared by diet; the bowels are to be opened the day before the operation. The latter is to be immediately followed by cold water; or by simple dressings and subsequently free ablutions to the parts. Any inflammatory action is to be at once checked. By the fourth day from six to twelve of the pins are to be withdrawn, and all of them by the fifth or sixth. The ligature to the veins Dr. E. has never known to produce uneasiness or any evil consequences. Pins are preferred to needles, from the slowness of their oxidation. Dr. E. recommends the operation described, because by it alone are the two principal indications for surgical interference in varicocele accomplished—the removal of redundant scrotum, and the destruction of the enlarged veins. By it the parts are fully exposed to view, and the artery and vas deferens certainly avoided. It cannot fail to produce a radical cure. It is safe, simple, and certain. There is no danger from phlebitis, the veins not being wounded but simply closed, and by a ligature which is entirely dissolved in a few days. The entire wound healing mostly by the first intention.

The concluding paper in the present volume of *Transactions* is a report by Dr. C. C. COX, of Maryland, on "American Medical Necrology." It comprises biographical sketches of deceased physicians of the United States, some of them having attained to more or less eminence in the profession, within a field of constricted or extended limits, while others had but just entered upon their professional career.

D. F. C.



ART. XXVIII.—*Transactions of American State Medical Societies.*

1. *Transactions of the Medical Society of the State of New York, for the year 1867.* 8vo. pp. 563. Albany.
2. *Proceedings of the State Medical Society of Kentucky. Meeting for Re-organization, held at Louisville, April 2d and 3d, 1867.*  
*Thirteenth Annual Meeting, held at Danville, April 7th and 8th, 1868.* 8vo. pp. 113.
3. *Transactions of the Fifteenth Annual Meeting of the Medical Society of the State of North Carolina, held at Warrenton, N. C., May 20th, 1868.* 8vo. pp. 72. Wilmington, 1868.
4. *Medical Communications, with the Seventy-sixth Annual Convention of the Connecticut Medical Society, held in New Haven, May 27th and 28th, 1868.* 8vo. pp. 208.
5. *The Transactions of the New Hampshire Medical Society. Seventy-seventh and Seventy-eighth Anniversaries, held in Manchester, June 4th and 5th, 1867, and June 2d and 3d, 1868.* 8vo. pp. 142.

1. THE theme of the Annual Address before the *New York State Med. Society*, by the President, J. C. HUTCHISON, M. D., is, the moral power of the profession, instead of legal enactment, the best agency in effecting medical reform. This bold position is sustained with great ability, and its truth fully established by a chain of arguments the validity of which can scarcely, we think, be gainsaid. The prominent landmarks indicated by Dr. H. in his address, were it possible to establish them, would be calculated to guide us with certainty in our efforts to elevate the character and extend the usefulness of the medical profession.

THE first of the professional papers (Art. II.) is the description, by Dr. ALDEN MARCH, of a "New Method of Removing a Urinary Calculus from the Urethra." The calculus was lodged in the urethra in front of the testes. Complete anæsthesia being effected by ether and chloroform, the process of dislodging the foreign body was commenced by urging it forwards with the fingers. It was thus brought within about an inch and a half of the orifice of the urethra, where it resisted all further manipulation of the kind; a large-sized steel probe was now passed into the urethra down to the calculus, by which the passage was expanded. With the sound thus fixed in contact with the stone, the manipulating process with the fingers was again resumed, by which both stone and sound were finally extruded from the urethral orifice.

"On the Function of the Capillary Bloodvessels" (Art. III.), by Prof. H. N. EASTMAN, M. D., of Geneva Medical College. The object of this paper is to prove, not only that the capillaries are entirely different in structure and function from the minute arteries and veins, but that they are not vessels in the common acceptation of the term, but rather channels, or mere repositories of the blood—innumerable passages permeating all the tissues, in such extreme proximity, and insinuating in such a manner as to divide the entire organism into myriads of islets so inconceivably minute that every atom of the solids is brought in such intimate, though mediate, relation to the blood, that the latter is made to subserve the functions of organic life or contribute to the process of nutrition, disintegration, and other vital phenomena; an arrangement analogous to, if not identical with, the porous structure of vegetables, and some of the lower order of animals, which are provided with no proper vascular system, but subsist by a sort of imbibition and circulation through channels or interstices that pervade their entire structure.

The next article (V.), a prize essay on "Medical and Vital Statistics," by Dr. FRANKLIN B. HOUGH, is a highly interesting one. It points out, in detail, how, by the daily record, in a systematic manner, of the observations of the physician and surgeon, they may be improved to the greatest advantage. It presents, also, some suggestions in respect to the best manner of keeping those records and tabulating their results. These suggestions are replete with instruction, from which many a useful hint may be obtained by the medical observer.

The essay comprises the draft of a very good law to provide for the *registration of births and deaths* in the State of New York.

Dr. J. ROOT, of Batavia, in Art. VI., gives an account of a case of "Empyema," in which paracentesis thoracis was performed, with immediate relief, and ultimate and permanent recovery of the patient.

Art. VII., "Spotted or Congestive Fever," by Dr. C. B. COVENTRY, is, so far as it goes, not devoid of interest or instruction by confirming former observations; we cannot see, however, that it elicits any new light upon the history, etiology, pathology, or therapeutics of the so-called spotted fever.

The next article (VIII.), by Dr. ALONZO CHURCHILL, of Utica, is upon the same subject as the preceding, "Cerebro-Spinal Meningitis, or Spotted Fever." It is a short paper, and can by no means be considered as full and satisfactory.

Art. IX., "Chlorosis," by Dr. W. H. THOMSON, of New York, is a laboured paper, rather obscure, it strikes us, in some of its teachings. If we do not misunderstand Dr. T., he believes that the cause of chlorosis, when it is fully formed, is uterine irritation. It is very probable that in the female certain forms of uterine suffering, some derangement of the organ, may often become a predisposing cause of the disease. But chlorosis is not exclusively a disease of the female. All of its pathognomonic symptoms are repeatedly met with in the male, not as an attendant upon some chronic organic affection, but, apparently, as an idiopathic disease. The real cause, therefore, of chlorosis must be sought for in some derangement independent of one seated in the womb.

We have next in order (Art. X.) an address delivered before the Medical Society of the County of Albany, by Dr. LEVI MOORE. Its leading theme is the vital importance of sanitary science or hygiene in its various relations to society collectively, and to each individual composing it. The remarks of the author are pertinent, and his views, upon the whole, are borne out fully by the experience derived from the condition of those communities amid which morbid causes are permitted to prevail without restraint, contrasted with that of such as are equally liable to become the foci of disease, but which are watched over by an ever-vigilant and active sanitary police.

Art. XI. Case of "Vomiting of Fat," by Dr. H. B. SALMON, of Stuyvesant Falls. This curious case occurred in a female. The leading symptoms were pain in the epigastric region, and the vomiting of a substance that had the appearance of melted lard. The early life of the patient was unattended by anything remarkable. When twelve years old she had an attack of remitting fever, which lasted about three weeks. From that time until 16, when she commenced to menstruate, she had frequent attacks of epistaxis. At the age of 20 she commenced to vomit fat. After slight pain and acrid eructations, there would occur the vomiting, at first of a mouthful or two of a fatty substance, which increased constantly in quantity, until she would sometimes discharge at one time a measured pint. The usual intervals were from one to two weeks; the longest was six weeks. The patient is of medium stature, light eyes, light complexion, weight about 140 pounds; had been married and had five children; ceased to menstruate at 40, is now 66 years of age; appetite good, not particular as to food; bowels ordinarily costive; no fulness nor tenderness upon pressure at any part of abdomen. No state or condition of the system seemed to augment her disease. She has derived little or no benefit from medicine. For the past year the attacks have been preceded by more pain; they are also of longer duration. There is a gradual emaciation, but not more than in most healthy persons of her age. During the intervals of vomiting, her health is good.

Dr. FREDERICK HYDE, in Art. XII., "Hernia and its Complications," presents a very clear exposition of the difficulties which occur in arriving at a correct prognosis in cases of strangulated hernia, from the impossibility in many cases of determining with any certainty, until the strangulated parts are laid open, their actual condition. In every case, therefore, of strangulated hernia, in order to give to the patient the greatest chance of a favourable recovery, an early resort to the knife is strongly urged. While it is impossible, remarks Dr. H., that any fixed rule can absolutely limit the extent of trial by the taxis, it is positively certain that every manipulative procedure, beyond a

fair, prudent trial of this means, if it do not succeed, will surely compromise the safety of the case. He believes there are many instances in which, if one fair trial of the taxis, taking advantage of all adjuvant means, has been made, it would be better not to repeat the effort, but proceed at once to direct relief by dividing the stricture.

"The Medical Use of Electricity" is the subject of the next article (XIII.), by Dr. G. M. BEARD. After a brief history of the attempts that have from time to time been made to derive from electricity a curative effect in a certain class of chronic diseases, an exposition is given of what Dr. B. believes to be the true position it now holds as a remedial agent, and those affections in which, when properly applied, it will be found to exert the most beneficent influence.

Art. XIV. "The so-called Chronic Metritis and its Rational Therapeutics," by H. R. STORER, M. D., of Boston. The views presented in this paper are well deserving of a careful study by such practitioners as desire to arrive at more clear and comprehensive views in reference to some of the more common uterine affections than those based upon the popular mechanical uterine pathology of the day, and leading to a more correct, efficient, and rational plan of treatment.

"Still-Births" is the subject of the next article (XV.), by Dr. G. T. ELLIOT. The article contains much that is true, and many a useful hint in reference to a subject of deep interest to the obstetrician. It fails, however, to develop the true causes of a large class of still-births, and the proper means of preventing their occurrence or of counteracting them when present.

Art. XVI. "Two Cases of Ligation of the Primitive Carotid Artery," by Dr. J. H. ARMSBY. Both cases are highly instructive. The first throughout its entire history is replete with interest, but more especially from the fact of the entire recovery of the patient after the operation, notwithstanding the occurrence on the eleventh day of secondary hemorrhage, from one of the communicating branches of the external carotids of the opposite side to that operated on, which was controlled by constant pressure. In the second case, that of a girl seven years old, the ligature was applied in consequence of an accidental wound which divided the right carotid and temporal arteries. On the 9th day after the accident the ligature was applied. Notwithstanding troublesome secondary hemorrhage from arteries of the face and head, through the carotids and their branches of the opposite side, complete recovery ensued.

Art. XVII. "Report of Cholera at Quarantine, Port of New York, for the year ending December 31st, 1865, and December 31st, 1866," by Dr. J. SWINBURNE, Health Officer. This report furnishes an additional contribution to the history of cholera, from a comparison of which, with those already on record, must the physician make up his verdict as to the etiology of the disease, more especially as to the causes upon which depends its spread from place to place, whether by a current of poisoned air, or, as the author of the report before us believes, through the medium of an infection conveyed in the bodies of the sick or in clothing and other effects.

Art. XVIII. "New Interpretation of the Physiology of the Retina of the Eye," by Prof. J. TOWLER, M. D. The following are the general conclusions of the author: 1. The lens of the eye is so situated in reference to the retina as to require no focussing. 2. The combination of the crystalline lens, the aqueous humour, and the meniscus-shaped cornea, being corrected for both spherical and chromatic aberration, produces, of objects in the proper position, a miniature solid phantom picture in the substance of the retina *without volition*—that is, independent of volition. 3. This solid picture existing in the midst of the transparent nervous expansion of the retina, the *attention alone has to be focussed* upon a given part, in order that this part may be carried to the sensorium. 4. Myopia and Presbyopia result essentially either from the defective position of the retina, or from its inadequate thickness, and partially from the inefficiency of the iris to perform its functions.

In Art. XIX. is discussed the subject of "Tenant Houses;" their ground area, cubic feet of air space, and means of ventilation. The facts presented by the writer of this paper, W. F. THOMAS, M. D., are chiefly drawn from the tenant houses of New York city, the condition of which certainly calls loudly for a

speedy and thorough reform. The only effectual means by which the evils resulting from this source can be remedied is, perhaps, the erection, in suitable localities, dwellings for the poor, the rents of which to be put at a sum that shall be entirely within the means of those who are destined to be their tenants. The character and the number of the population of these tenements, the rules for their government, and their due ventilation and cleanliness, to be made, and at all times strictly enforced by a competent board of supervision.

Art. XX. "Spontaneous Evolution of the Fœtus; its Mechanism and Treatment." By J. V. P. QUACKENBUSH, M. D. An able and instructive paper, properly illustrated by well-drawn lithographic diagrams.

Art. XXI. A highly instructive paper on the "Continued Fever of New York City," by H. M. FIELD, M. D., which must be studied as a whole, in order to derive from it the instruction it is calculated to impart in reference to a form of fever very prevalent among the poor of our large cities, inhabiting unhealthy localities, and overcrowded, illy-ventilated, and badly kept dwellings. Any attempt to present an analysis of the paper, sufficiently concise to adapt it to our limits would be doing injustice to the writer of the paper, and communicate no useful information to our readers.

Art. XXII. "Summary of Seven Daily Observations of the Temperature, Moisture, Weight, Direction, and Condition of the Atmosphere, for the year 1866, at the Eastern Dispensary, New York." By J. P. LONES, M. D.

Art. XXIII. "On Cystitis and Rupture of the Urinary Bladder, treated by Cystotomy." By WILLARD PARKER, M. D. Having seen, in cases of cystitis, complicated with urinary calculus, the most encouraging results which follow the perfect rest of the bladder after the operation of cystotomy, and appreciating also the happy results of rest following operations on the anus—indeed, in all cases of inflammation—Dr. F. resolved to put in practice the operation of cystotomy, for severe cases of cystitis, in which ordinary treatment had failed to accomplish a cure, and with the best results. Dr. P. has likewise suggested, in cases of rupture of the bladder, an early incision of the latter as the most probable means of relief—by keeping the injured organ at rest until the rupture unites, and by affording a ready escape to the urine as soon as it is formed, thus preventing any extent of infiltration.

Art. XXIV. "On Consanguineous Marriages." By Prof. O. W. MORRIS, of the New York Deaf and Dumb Institution. This is an additional contribution—so far as it goes—to show the deleterious influence of these marriages upon every function of the human organism, whether nutritive, affective, or intellectual.

Art. XXV. A case of "Fatal Hemorrhage succeeding Pneumonia." By J. D. WATKINS, M. D. This case, and another in which fatal epistaxis succeeded to pneumonia in an adult, which was seen by Dr. W. in 1832, suggests the question whether analogous cases have been observed; and if so, what method of treatment, if any, has proved successful? Is it probable that by a particular treatment of the pneumonia, the subsequent hemorrhage may be promoted or prevented?

Art. XXVI. "Report of Committee on Pharmacology." By its Chairman, E. H. SQUIBB, M. D. The entire report may be perused with profit. So far as they go, the remarks of Dr. S. on certain articles of the *materia medica*, such as *gelsemium*, *podophyllum*, and *coniium*, have considerable practical value.

Art. XXVII. "Report of the Committee on Hygiene," by A. N. BELL, M. D., Chairman, is a mere outline of facts in elucidation of the spread of certain diseases, and the means for their prevention, under the head of marine hygiene, by Dr. Bell, and results of quarantine for 1866, by Dr. Anderson. Reports on Epidemic Diseases in Military Quarters, Barracks, etc., and on the Etiology of Epidemic Diseases in the State of New York, are promised to be made at the next session.

Art. XXVIII. "Diploteratology." An Essay on Compound Human Monsters, comprising the History, Literature, Classification, Description, and Embryology of Double and Triple Formations, including the so-called parasitic monsters, fœtus in fœtu, and supernumerary formation of parts or organs in man. By G. J. FISHER, M. D. Continued from the Transactions of 1866. This,

with the former papers of Dr. F., furnish a most comprehensive, accurate, and interesting history of the several forms of human monstrosity. The pictorial illustrations are copious and well executed. We should be much pleased to see the entire series of papers by Dr. F. on monstrosity collected into a separate volume. It would, we feel very certain, be acceptable to a large portion of our profession.

Appended to the present volume of Transactions are well drawn up biographical sketches of Drs. Wm. Taylor, Laurens Hull, W. F. Carter, Jos. M. Smith, J. M. Prun, Jas. Lee, and Howard Townsend, all deceased members of the Society.

2. The regular annual meeting of the *Kentucky State Medical Society*, on the 7th and 8th of April, 1868, was opened by an address, from the President, Dr. D. N. PORTER, the subject of which is the antiquity, dignity, and responsibility of the office of medical practitioner, and the necessity of "the most liberal mental endowments, and of a thorough course of professional training," to enable any one to perform with honour to himself and to the safety and advantage of the community at large, the several duties which devolve upon him when he assumes the office of physician. The address is replete with sound views enforced with commendable zeal.

Following this is the report of a committee appointed to memorialize the legislature of Kentucky, for the enactment of a law providing for the registration of births, marriages, and deaths throughout the state; with a draft of such a law annexed.

The first of the professional papers is the report of a committee appointed to examine into the question of the Inoculability and Transmissibility of Tuberculosis, with Dr. J. D. JACKSON as its chairman.

The report is a very full one, presenting a concise analysis of all the leading facts and observations bearing upon the question submitted. The weight of the testimony hereto adduced, would seem to be in favour of the transmissibility of tuberculosis by inoculation with tubercular matter; the subject is, nevertheless, one fairly open to discussion. The next important question and one intimately connected with the foregoing is that of the contagiousness or infectiousness of tuberculosis. Even were we to admit that the inoculability of the disease to be established, this would not prove its infectiousness, since a disease may be inoculable and yet not infectious; just as, on the other hand, contagion does not necessarily imply inoculability.

In nine of the ten cases reported by M. Bruchon and in the entire four reported by Guibout, the disease commenced with the husband, the wife, previously healthy, robust, and without any hereditary tuberculous tendency, becoming subsequently affected. In such cases, even if we reject *in toto* the idea of the infection being through the breathing of air previously respired by the consumptive, another and more plausible explanation remains; as has been almost universally admitted, phthisis like syphilis is hereditarily transmissible, and as the observations of Lallemand, Vassal, Cazenave, and Porter have established the fact that the seminal fluid of a syphilitic father may infect the ovum of a healthy mother, who may thus become herself indirectly infected through the foetal circulation, so, by a parity of reasoning, we may conclude tuberculosis to be in like manner transmissible. Regarding the transmission of the disease through the milk, sweat, saliva, or other secretions—the absence of everything like proof of such being the case, save perhaps in the case of the milk, would carry us entirely within the shadowy domain of hazardous conjecture, were we to entertain the discussion.

From the report of the Committee on "Epidemics," Dr. L. P. YANDELL, chairman, it appears that, since the last session of the Society, the seasons have been remarkable because of their exemption from epidemic diseases throughout Kentucky. Not only has the State been free from epidemics of every kind, but even the usual endemic and sporadic acute diseases during the year 1867 and early part of '68 prevailed to a less extent than usual. In the report will be found a very satisfactory sketch of the nature and extent of the more prominent diseases of the State.

The same gentleman, as chairman, presents the report of the Committee on Milk-sickness. The earlier settlers of Kentucky and Tennessee encountered a malady presenting many features dissimilar to any of those observed in the diseases with which they were previously acquainted, they hence set it down as a new malady and one peculiar to the rich country they had so recently occupied. From the fact that it appeared nearly always to be traceable to use of milk or butter, or of beef, veal, or mutton as food, it became a prevalent belief that the disease was produced by a poisonous condition of the milk of the cow and of the flesh of the domestic animals used as aliment, derived from the substances upon which they fed. This led to the name *milk sickness*, which is still in use. A disease which in the lower animals is supposed to correspond with the milk sickness, was termed *trembles*.

After a careful examination of the leading facts supposed to sustain the popular theory of the causation of the so-called milk-sickness, the report concludes as follows:—

We by no means assert that the poison which originates milk-sickness is not derived from milk, butter, or the flesh of animals impregnated with it, but with the evidence before us, we are compelled to regard the proposition as not proved. A vast amount of careless observation has been published on the subject. Many of the statements on record, in reference to it, are inconsistent with one another. Many of the cases that have been reported as those of milk sickness are destitute of all the characteristics of the disease. Cases are reported in which the poison was so chronic that it was only by active exercise, after weeks of incubation, the poison was rendered operative, and other cases in which they who were in the act of partaking of the poisoned food suddenly expired. "It is impossible to reconcile observations so contradictory. It is not easy to believe that an agent so deadly in its action as to destroy the life of a calf while sucking the cow, may yet be harmless to the latter, and be eliminated, as has been asserted, from her system by feeding on clover. The statement that men have been killed by eating the flesh of oxen, which, to all appearance, were in perfect health when slaughtered, or that a woman may be poisoned by a soup made from fowls that had been picking at the carcasses of animals that had died of *trembles*." "It is possible," says the report, "that a plant exists possessed of all the noxious properties requisite to develop in the human system the symptoms of milk-sickness through the medium of the food of cattle feeding upon it, but it cannot be believed that such plant can be perfectly harmless to some members of a family and act as a violent poison on others."

The volume closes with a "Letter from Dr. L. P. YANDELL, Jr., Delegate to the International Medical Congress" held at Paris, March, 1868, giving a very concise but interesting notice of the proceedings of the congress.

3. *Transactions of the Fifteenth Annual Meeting of the Medical Society of the State of North Carolina*.—The volume opens with an interesting essay on "the Modern Treatment of Acute Internal Inflammations," by Dr. WM. A. B. NORCOM, of Edenton. After noticing the former practice almost universally pursued in cases of acute internal inflammations, especially those of the chest—profuse venesection, followed by the use of mercury, antimony, and other depressing remedies—which practice Dr. N. condemns, he remarks: "The experiments of Hering and others show that in pathological increase of the heart's action the rapidity of the general circulation is generally diminished. And MM. Estor and St. Pierre have shown that the venous blood in returning from an inflamed part is of a brighter colour than ordinary venous blood, showing *sub-oxidation*. These conditions certainly do not form a very clear indication for the employment of depressing agents in the treatment of inflammation. On the contrary, they show diminished life. The general condition also of the patient strongly indicates a lowered vitality. "How different the practice condemned from the one to be adopted—the *restorative and eliminative*. Modern medicine teaches us that internal inflammations cannot be cut short, and that while we aid nature by the most nutritive food, and alcoholic stimulants, when necessary, to bring about most important changes, we, at the same time, give such remedies as will assist in the removal of effete products by the emunctories. Reference is made, of

course, to diuretics and diaphoretics. Rest in bed and support are necessary from the first; local warmth, local depletion, and sometimes blisters, are most important remedies. Expectorants, so frequently given in pneumonia, are not generally called for, as the exudation matter is in very great part removed in other ways; and also, they frequently cause nausea, and thus present an obstacle to alimentation. Cathartics are, of course, sometimes needed." "This treatment, simple as it may seem, and as it really is, is practised by nearly all modern scientific physicians, and they tell us that its success far transcends every other. In addition to the actual saving of life, convalescence is very rapid after the disease subsides."

The Annual "Address of the President" of the Society, by Dr. S. S. SATCHWELL, follows, and we are gratified to learn from it that the State Medical Society of North Carolina, has kept up, successfully, its organization, and has worked on diligently amid all the obstacles presented by the disturbing influence of the war in which the State has recently been engaged; and that the prospect for the future increased usefulness of the Society is in the highest degree encouraging.

Following the Address is a "Report on Cerebro-Spinal Meningitis," by Dr. N. J. PITTMAN, made up simply of a short history of a single fatal case of the disease, the details of which cannot be said to add anything of importance to our present knowledge of its etiology, pathology, or therapeutics.

A case is next related by Dr. E. PORTER, of "Gunshot and Bayonet Wounds healed by the first intention." Interesting and instructive as this case is, it does not admit of any very satisfactory analysis.

Dr. J. F. SHAFFNER relates sundry "surgical cases," which, while they present nothing absolutely new, are not without considerable interest. The following extract forms a part of the remarks introductory to the account of a lateral operation of lithotomy which terminated fatally.

In Western and Northwestern North Carolina, so far as Dr. S.'s observation extends, stone is of rare occurrence, while among the bordering counties of Virginia it is frequently encountered. The town of Salem and its immediate vicinity have been especially exempt. Dr. S. has not been able to learn of any well-authenticated case of stone occurring in an inhabitant of that town.

4. The subject of the "Annual Address" of the President of the *Connecticut Medical Society*, Dr. C. WOODWARD, of Middletown, at the opening of the Convention, is "Our Organization; its Relations and Responsibilities." The distinctive characteristics of the founders of the Connecticut State Medical Society, the state of the medical profession and of the people at the period of its organization, and the claims upon it of the community, are concisely referred to; while, in conclusion, a few very pertinent remarks and suggestions are presented in respect to its future improvement, and the extension of its influence.

Following the address is an article (2) on the "Relation of Theory to Practice," by Dr. H. A. CARRINGTON, of New Haven, which is marked throughout by a correct appreciation of the subject. We fully agree with Dr. C. in his final estimate of theory in relation to practice, namely, that "with due regard to proper limitations and conditions, theory is a valuable servant to the cause of truth. If we receive it merely as a provisional statement or explanation, the truth of which remains to be established, either by experiment expressly instituted, or by taking advantage of those that are being made for us by nature, even then it is to be welcomed. But, on the other hand, if we take the theory of this or that one as the ultimate expression of truth, and become partisans instead of seekers, in that case it brings only a train of evils."

The next article (3), on "Army Hygiene," is by Dr. R. BARTHOLOW, being the "Jewett Prize Essay on the question, by what Hygienic Means may the Health of Armies be best preserved?" Of this very excellent and somewhat bulky paper we can only present a summary of the general conclusions to which Dr. B. has arrived after a careful survey of the whole ground.

"1. The minimum age of the men composing an army should be twenty-five years. In addition to the ordinary requirements of recruiting regulations,

the influence of diatheses and cachexiæ over the health and physical stamina should be considered.

"2. In the training of recruits, the conditions of the military service should approach as nearly as possible to those of civil life. As the mortality of this period is greatly in excess of the other periods of military life, special hygienic precautions should be taken as respects habitations, diet, clothing, exercise, amusements, etc.

"3. As the chief danger to the health of the soldier arises from scorbutus, crowd-poisoning, malaria, a morbid cause compounded of the two latter, and from contagious and epidemic diseases, the sanitary regulations of armies should be directed to the avoidance of the evils of permanent camps and barracks; to providing a varied and ample diet; to instituting the most approved measures of private and public hygiene, and to enforcing police laws against the spread of probable zymotic diseases."

The next (4th) article is also a prize essay—the Russell. Its subject is the "Therapeutical Uses and Abuses of Quinia and its Salts." It is by the same author as the preceding. The following is a summary of the facts developed in the course of the essay:—

"*Specificity.*—Quinia is prophylactic, but its power declines with use. Cures acute malarial poisoning; without influence upon the structural alterations of chronic malarial poisoning, and only effective temporarily against the febrile movements. The discovery of animal quinoidine only serves to explain the *methodus medendi*, but does not add to our knowledge of the therapeutical uses.

"*Physiological Effects.*—Quinia is rapidly absorbed and excreted. A part remains in the tissues, increasing animal quinoidine. In pathological states (malarial poisoning) increases oxidation; in physiological, retards oxidation. Exerts an inhibitive influence upon heart and arterioles; impairs primary assimilation, and damages the blood.

"*Rational Therapeutics.*—In states of congestion; incipient inflammation; and in stage of resolution; *methodus medendi*; through vaso-motor nerves; in neuralgic affections.

"*Empirical Therapeutics.*—In periodical diseases; in intercurrent diseases; as a tonic.

"*Abuses.*—In chronic malarial poisoning; in fevers; in acute rheumatism; as a tonic in acute and chronic diseases."

Next follows (art. 5th) a paper on the "Treatment of Paralysis by Hypodermic Injections of Strychnine," with remarks on Infantile Palsy, by Dr. M. GONZALEZ ECHEVERRIA, Superintendent of the Mahopac House for Epileptics and Paralytics, New York. The following remarks at the close of Dr. E.'s paper are not without interest.

Dr. E. has made reference in his paper on "Reflex Paralysis" to the sclerosis and amyloid degeneration of the spinal cord, existing in infantile palsy. There are, again, instances in which no such degeneration appears to have been discovered. The celebrated Duchenne de Boulogne, in his researches on *Pseudo-hypertrophic*, or *myo-sclerotic* paralysis (*Arch. Gén. de Méd.*, Jan. to May, 1868), states that no alteration of the nervous centres was found in the only case in which the investigation was made by the distinguished Cohnheim, formerly assistant of Virchow. This new and curious form of infantile paralysis is characterized by an increased volume of the muscle, consequent upon the interstitial multiplication of connective tissue between the primitive fibres. The disease is not common, and whether it is entitled to the separate nosological place that Duchenne gives it, Dr. E. is not prepared to dispute. Nevertheless, the sclerosis, that gives such a hypertrophied appearance to the muscles, he has himself discovered in ordinary cases of infantile paralysis, extending to a few muscles with the very structural changes described by Dr. Duchenne, after examinations by Ordíñez. This sclerosis, again, Dr. E. has found when the spinal cord was apparently free from damage, confined to the peripheral nerves, the ganglia, the muscles, and even to the capillary vessels of the paralyzed limbs. In the case of a young man who had been hemiplegic from infancy, could hardly speak, and had paralytic talipes, and contraction with deformity of the hand;



in several of the muscles of the extremities, which were larger than natural, there was a fatty substitution; but in others this was replaced by a great abundance of connective tissue, the primitive fibres being in many places quite transparent, and having several nuclei. From the periphery to the ganglia, the nerve fibres were nearly absent, and replaced by fine fibrillar tissue, also abundant in the ganglia, where the few cells spared were very dark, granular, and easily disintegrated. In this degeneration the spinal cord was not throughout equally involved. In many places it exhibited, under high magnifying power, a transparent gelatinous appearance, most manifest in the gray substance. There was very little increase of connective tissue in the posterior columns, while the anterior were completely destitute of nerve fibres; the neurilemma was infiltrated with brilliant amyloid corpuscles. Of these, some were present also in the lumbar ganglia. In two cases of epilepsy with local paralysis, dating from infancy, no definite change of the spinal cord was detectable, whereas the sympathetic ganglia, nerves, capillary vessels, and muscles of the palsied limb, showed in different degrees an alteration similar to that already described. Consequently, Dr. E. is led to believe that to the sympathetic, and not to the spinal system, ought to be ascribed the principal origin of infantile paralysis, as well as of some of the peripheral and reflex paralyses. The good effects of the hypodermic injections of strychnia add confirmative evidence to this view—the only one, Dr. E. remarks, accounting for the peculiar localization of the paralysis, as well as its obstinacy and long duration, without involving the spinal cord.

Art. 6th comprises "Observations, Ante-mortem and Post-mortem, upon the case of the late President Day," by Professor S. G. HUBBARD, M. D., New Haven. The valuable and instructive facts adduced by Dr. H. cannot well be detached from the general history of the case of President Day, preceding his death, as related in the paper before us, and the description of the lesions detected upon an examination of his body after death, for these we must refer those of our readers who would desire to study them to the paper itself.

Art. 7th is on the "Relation of Albuminuria to Puerperal Convulsions," by P. M. HASTINGS, M. D., Hartford. The most important portion of this paper is that devoted to a consideration of the treatment of puerperal eclampsia. According to Dr. H., the arrest of the disease will depend largely upon the prompt administration of active purgatives. Purgation, he remarks, is generally well borne, and marked relief from the form of toxæmia present is pretty sure to follow its operation. The compound powder of jalap and croton oil, assisted by stimulating enemata, he considers as among the best purgatives we can employ. Removal of the child, when it can be done readily, and without much violence, is our first duty. If the patient is plethoric, bleeding may prove of great service. In a large proportion of the cases that fell under Dr. H.'s observation, he would consider general bloodletting to be injurious, tending to prolong convalescence. By the free use of chloroform we are enabled, excepting, perhaps, in cases of serous effusion or of true apoplexy, to control effectually the convulsive paroxysms, and thus gain an opportunity for the use of the remedies designed to remove their cause. After purgation, the free use of opium, combined in some cases with colchicum, will prove of great value. Bromide of potassium has recently been recommended as a valuable remedy. Dr. H. has no doubt that it will prove of great benefit in cases where opiates are not well borne.

In Art. 8th is related a "Case of Ichthyosis Sauriderma Spinosum," occurring in a girl ten years old, by Dr. H. PIERPONT, of New Haven. The narrative throws no additional light upon the pathology of a very curious, and, as far as this country is concerned, very rare affection of the skin.

Art. 9th is an account of a case of "Traumatic Lesion of the Knee-joint," by Dr. E. F. COATES, and closes the scientific papers in the present volume of "Medical Communications."

5. The theme of the Annual Address delivered before the *New Hampshire Medical Society* at its session of 1867, by the President of the Society, Dr. R. P. J. TENNY, is *Mind, its Nature and Location*. These questions are discussed

in a very pleasant style. Though the author may not be liable to criticism on account of the advocacy of any unfounded hypothesis in psychology, it must be confessed that he has failed to add anything to our knowledge of the nature of mind, or as to where it is located in man's organism.

The Address of the President, Dr. A. H. ROBINSON, delivered at the annual meeting in 1868, is devoted to the consideration of the proper aim and the incumbent duties of the physician.

At the session of 1867, a paper was read by Dr. A. B. CROSBY, on "Septicæmia," or blood-poisoning, including the conditions of the blood known as *ichoræmia*, *pyæmia*, *toxæmia*, etc. These are simply names indicating "a morbid condition of the blood caused by the introduction of a septic poison," whether derived from ichorous, putrid, or other obnoxious matters other than the matters productive of specific diseases; never occurring as a primary disease, but liable to follow mechanical injuries, wounds, etc.

Dr. C. describes the effect of the septic poison as threefold:—

"1. It affects the blood itself, diminishing its fibrine, disintegrating its red corpuscles, and favouring coagulation. If the quantity introduced into the blood is small, elimination of the poison may occur spontaneously; but if the amount is large, the result must be disastrous.

"2. The morbid product evinces itself in its effects upon the circulation; the heart's action is depressed and weakened; the pulse is rapid and small; rapidly increasing debility supervenes, and death results by asthenia. Meanwhile there is frequently a marked tendency to hemorrhage of a passive character.

"3. The poison may affect the solid tissues, as evinced by secondary purulent collections, mainly occurring in the substance of the viscera."

This paper will repay the time demanded for its careful study.

At the session of 1868, a paper on "Medical Diagnosis" was read by Dr. J. N. WHEELER, of Dover. The author enters no further into the subject than to indicate the importance of correct diagnosis to a rational and effective treatment of disease; and points concisely to what is necessary on the part of the physician to enable him to arrive at a correct judgment as to the location, nature, and extent of the respective complaints for the treatment of which his skill may be invoked.

The next article is an "Oration on Medical Education," by Dr. L. B. HOW, of Manchester. The orator, in a somewhat familiar style, runs over the leading topics embraced in the general subject of his discourse. In all the views advanced by Dr. H. he is perfectly orthodox and practical.

A "Report on Practical Medicine" was presented by Dr. L. W. PEABODY, of Epsom. The report is both interesting and instructive; it presents, however, no prominent points which call for special notice.

The "Thermometry of Disease," is the title of a paper presented by Dr. T. J. W. PRAY, of Dover, the object of which is to enforce the study of the temperature of the body in different diseases, and at their several stages, as a basis as well for the perfection of diagnosis in certain cases, as, more generally, for determining the progress and tendency of disease, with a view to aid the physician in the formation of a correct prognosis.

Dr. S. M. WHIPPLE discusses, in a short paper, the by no means unimportant subject of the "Prosecution of Medical Men," which he handles with much good sense. With Dr. W. we agree, that the community seem not to understand that by encouraging such prosecutions they endanger their own safety. Suits against medical men can have only one tendency, and that is to break down the medical profession, the only and last recourse man has in sickness and in case of accident; his only instructor as to the several sources of disease, and the means for their prevention, or, when present, their removal; his only refuge for the mitigation of suffering, and the alleviation of the pangs of death.

D. F. C.

ART. XXIX.—*Reports of American Hospitals for the Insane.*

1. *Of the Maine Insane Hospital, for the fiscal year 1866-67.*
2. *Of the McLean Asylum, for the year 1867.*
3. *Of the Bloomingdale Asylum, for the year 1867.*
4. *Of the New Jersey State Asylum, for the fiscal year 1866-67.*
5. *Of the Pennsylvania Hospital for the Insane, for the year 1867.*
6. *Of the Western Pennsylvania Hospital (Dixmont), for the year 1867.*
7. *Of the United States Government Hospital, for the fiscal year 1866-67.*
8. *Of the Western Lunatic Asylum, Virginia, fiscal years 1865-66 and 1866-67.*
9. *Of the West Virginia Hospital, for the fiscal year 1866-67.*
10. *Of the Eastern Asylum of Kentucky, for the fiscal year 1866-67.*
11. *Of the Western Asylum of Kentucky for the fiscal year 1866-67.*
12. *Of the Northern Ohio Asylum, for the fiscal year 1866-67.*
13. *Of the Michigan Asylum for the fiscal year 1866-67.*
14. *Of the Iowa Hospitals for the fiscal years 1865-66 and 1866-67.*
15. *Of the Minnesota Hospital, for the year 1867.*

1. THE department for males at the *Maine Insane Hospital* is so overcrowded with patients that the superintendent pleads for an additional wing to the building, and the trustees ask for an appropriation of thirty thousand dollars for its construction.

	Men.	Womer.	Total.
Patients treated from Dec. 1, 1866, to Dec. 1867	222	204	426
Cured . . . . .	36	18	54
Died . . . . .	19	12	31

Died of exhaustive mania, 7; general paralysis, 4; consumption, 4; epilepsy, 3; diarrhoea, 3; old age, 2; marasmus, 2; chronic mania, 1; pneumonia, 1; serous apoplexy, 1; disease of heart, 1; suicide, 2.

In allusion to sympathetic action upon the brain, Dr. Harlow says: "Of all the organs of the body with which the brain seems to be in the closest sympathy, those set apart for the reproduction of the species are the most prominent. When these are disturbed in their legitimate functions, they act with great power upon this important organ. More physical health, I apprehend, is primarily damaged, and more mental suffering is caused by a perversion of these organs than can be traced to any other source. In every case of onanism, and in every case of libertinism, the brain is sure to suffer more or less, and in very many cases the mind feels most alarmingly the work of disintegration. \* \* \* It is well known with what peculiar force the puerperal condition acts upon the nervous system in some constitutions, how it serves to develop the terrible malady which we all may fear and dread. Nor is the influence less in those females, married or unmarried, who for any pretext whatever resort to that unnatural and wicked practice of procured abortion, to escape maternal responsibilities. The effect of this practice, so frightfully prevalent at the present day, upon the moral and physical health of the female portion of the community especially, is far more destructive than is generally supposed."

2. In the course of the year 1867 the trustees of the *Massachusetts General Hospital*, of which the *McLean Hospital* is a branch, purchased a farm adjoining the premises of the institution last named, thus enlarging the grounds for recreation, and preventing the encroachment of a dense neighboring population.

	Men.	Women.	Total.
Patients treated during 1867 . . . . .	137	149	286
Cured . . . . .	—	—	45
Died . . . . .	—	—	27

Dr. Tyler's report almost wholly consists of an account of European hospitals which he has recently visited, interspersed with suggestive remarks upon the treatment of the insane, and derived lessons which may be useful in

America. Of Gheel, which has, by some, been presented as a model to be imitated in this country, he says:—

“It would be both unfair and wrong to give an impression that, because a thousand people with imperfect and damaged brains, range almost at will at Gheel, that all the insane should be so treated, and that there is little need of hospitals. \* \* \* \* The law of the country does not allow any person to be sent to Gheel, who upon examination can be considered curable, nor of incurables any one who is homicidal, suicidal, violent, of vicious propensities, or likely to run away. Only those who are quiet and docile can go there. Those who become otherwise after their arrival are restrained in their cabins or taken to the infirmary, and if they continue so, are removed to some hospital. A great majority are idiots, imbeciles, and the demented by epilepsy, paralysis, and from other causes. Only one person died, I see, who, by the most sanguine stretch of hope, could be esteemed curable.”

But the doctor further says: “The establishment at Clermont, France, except that it is under private management, seems to me to realize more fully than any other the present necessities of our country. Here is the hospital proper for the treatment of curable cases, and for the restraint of the dangerous. At a short distance is the colony, with its buildings, differing little from large boarding-houses, where people live without restraint, and labour when they are able and willing. There is a constant interchange going on between the departments. If a person becomes restless or boisterous, or unmanageable in the colony he is taken to the asylum. When one in the asylum becomes quiet, and can be trusted with his own liberty, and is capable of labour, he is at once transferred to the colony, and this is felt to be an incentive to self-control by the inmates of the asylum.”

3. The governors of the *New York Hospital*, of which the Bloomingdale Asylum is a branch, are taking active measures for the removal of the latter institution beyond the limits of the city.

	Men.	Women.	Total.
Patients treated in 1867 . . . . .	153	159	312
Cured . . . . .	31	27	58
Died . . . . .	9	19	28

Deaths from phthisis, 2; acute disease of brain, 6; chronic disease of brain, 3; gradual exhaustion, 4; apoplexy, 4; puerperal mania, 2; disease of kidneys, 2; epilepsy, disease of heart, hepatitis, dropsy, and general paralysis, 1 each.

“Among the patients discharged, as improved,” remarks Dr. Brown, “a very considerable number were so nearly restored to their ordinary mental health that longer residence here seemed unnecessary, and yet the reality of convalescence could not be confidently assumed until tested by a return to former associations. In a large majority of these cases the result was complete restoration to health, so that if the annual record were made up at the close of each year, instead of from the daily register, we could truthfully make a material addition to the number of reported recoveries.”

4. The extensive additions to the wings of the *New Jersey State Lunatic Asylum* are nearly finished. When they are completed the hospital will accommodate five hundred patients. What with those already in the house, and those for whom application for admission has been made, Dr. Buttolph thinks that all the apartments will be occupied immediately after completion. Hence, he advises that another hospital shall be begun, and suggests “that it be so located as to be central to the most populous district in the northern and eastern part of the State, and so planned as to be adapted in size and arrangement to receive the number who would require its care, and all the insane of the *district*, without reference to the form or duration of their mental disorder.”

	Men.	Women.	Total.
Patients treated from Nov. 30, 1866, to Nov. 30, 1868 . . . . .	290	331	621
Cured . . . . .	38	34	72
Died . . . . .	22	15	37

Deaths from general exhaustion, 8; "epilepsy and congestion of the brain," 6; general paralysis, 4; consumption, 9; exhaustion of acute mania, 8; apoplexy, 1; cholera morbus, 1.

5. At the *Pennsylvania Hospital for the Insane*, a building connected with the department for females, was begun in the summer of 1867. It is intended as a distinct ward "for persons very sick, and for those labouring under acute affections of the brain, accompanied by high excitement, and requiring the utmost care and privacy, and yet, for obvious reasons, not most comfortably situated in any of the ordinary wards.

	Men.	Women.	Total.
Patients treated during the year ending Dec. 1, 1867	307	277	584
Cured . . . . .	64	63	127
Died . . . . .	15	10	25

Deaths from acute mania, 7; organic disease of brain, 5; consumption, 3; old age, 3; exhaustion of chronic mania, 2; diarrhœa, hemorrhage of lungs, cancer, and gangrene, 1 each.

The "twenty-second annual course of evening entertainments" for the patients lasted nine months. In each week, at the department for females "three evenings were devoted to lectures, concerts, or the exhibition of dissolving views, always with music, in the lecture-room; two to gymnastic exercises in the hall put up for that purpose; one to reading the Bible and sacred music, in the lecture-room; and one to tea-parties in the officers' apartments in the centre building—the number present at these last being limited only by the capacity of the tables."

At the department for males the course was the same except that billiards, ten-pins, and other games were substituted for gymnastics. "The total number who have been connected with the class (of light-gymnastics) is one hundred and fifty-eight; and the average number engaging in the exercises varies from twenty to thirty."

A large and valuable part of Dr. Kirkbride's report is the section entitled "Hints on Insanity, and the Care of the Insane." While discussing the subject of association, he thus speaks of the great service often rendered by intelligent patients to others by whom they are surrounded: "Unable to control their own morbid feelings, they still have the power to administer consolation to others, often with a delicacy, tact, and efficiency quite beyond the ability of many who speak disparagingly of such associations; and while thus benefiting others, they are frequently, perhaps insensibly, but still surely, promoting their own restoration."

The doctor recommends further provision for the insane of Pennsylvania, and adds: "It is to be hoped that the time is not far distant, when every State will recognize among its duties that of making adequate provision for all its insane, and that this can be done only in hospitals fully up to the knowledge of the times."

6. The general statistics of the *Western Pennsylvania (Dixmont) Hospital*, for the year 1867, are as follows:—

	Men.	Women.	Total.
Patients treated in 1867 . . . . .	210	158	368
Cured . . . . .			47
Died . . . . .			24

Deaths from consumption, 5; dysentery, 3; exhaustion of chronic mania, 4; exhaustion of acute mania, 3; diarrhœa, 2; epilepsy, 4; paralysis, 1; disease of heart, 1; injuries in attempting to escape, 1.

The finished portions of the building were inadequate to the proper accommodation of the patients; but "the completion of the western extension of the hospital will afford abundant room for those who are now under treatment."

7. The close of the late civil war greatly diminished the number of changes of inmates of the *Government Hospital for the Insane*. The admissions in the course of the official year embraced by the report before us, were "only a little

more than one-fifth" as numerous as in either of two official years during the rebellion.

	Men.	Women.	Total.
Patients treated from June 30, 1866, to June 30, 1867	273	117	390
Cured . . . . .	44	7	51
Died . . . . .	19	14	33

Died with "chronic, organic, and functional degeneration of the brain, without complicative or supervenient disease before death, 15; chronic, organic, and functional degeneration of the brain, with epilepsy, 2; ditto, with apoplexy, 2; ditto, with serous apoplexy, 1; ditto, with chronic cystitis, 1; ditto, with dysentery, 1; ditto, with general paralysis, 1; ditto, with remittent fever, 1; ditto, with chronic diarrhoea, 1; ditto, with phthisis, 1; maniacal exhaustion, 3; dysentery, 1; softening of the brain, 1; pneumonia, 1; cholera morbus, 1.

A considerable part of Dr. Nichols' report is occupied by a discussion of the treatment of inebriates and dipsomaniacs. We make the following extracts: "In relation to confirmed inebriates, we believe the desideratum of this particular time is a public judgment, distinctly expressed in the State constitutions and laws, and expounded and enforced by the courts, that they are dangerous to themselves and others, and may and should be legally subjected to prolonged restraint, both for the protection of society and for their own protection and reformation.

The discipline of an inebriate hospital should be coercive, and so understood; but as its inmates are not convicts, however culpable they may be in the eye of the moral law, the coercion may and should be disguised in every way that does not impair its essential efficiency. It was the practical error of the former treatment of the insane that it was too coercive, and time will probably show that it is the practical error of the system of treatment adopted in this latest enterprise which has appeared in the great field of social philanthropy that it is too voluntary. The fault referred to may not be wholly due to the inexperience of the conductors of a new enterprise. A more efficient system of reformatory restraint requires the authority of laws that have hitherto been enacted by one State only, and a court of that State has since decided that they are unconstitutional.

"The reports of the institutions for the insane, both of this country and Europe, show that intemperance is a common cause of insanity in its ordinary forms. The authorities, also, almost unanimously agree that inebriety sometimes becomes an insanity—a settled mental alienation, arising from a morbid condition of the brain and nervous system, which is chiefly characterized by a total abandonment to extreme indulgence, regardless of the most sacred claims and pledges, and by more or less impairment of the moral and intellectual powers of the individual. Where inebriety has clearly become a concomitant, as well as a cause of insanity, the case should be treated in an institution for the insane. \* \* \* \* \* In a few weeks—sometimes in a few days—after the dipsomaniac is placed under restraint and proper treatment, the immediate effects of drinking pass off, and to a casual observer he seems to be entirely sane; and if he can then manage to appeal to a court of competent jurisdiction by the writ of *habeas corpus*, it will probably set him at liberty. He is not sane, however. His moral and intellectual powers are weak and deeply perverted; his nervous system is irritable and depressed; every fibre of his being seems to demand stimulants, and his thirst for them is intense; and the moment he is discharged he resorts to their use with the unreasoning directness with which the brutes obey their instincts. In permitting him to renew his self-destruction—a self-destruction that carries so much misery along with it—society rejects the guidance of science, fails to discharge its obligations to the individual and to itself, and reaps a harvest of ills which, in their severity and extent, are second to none that afflict humanity. We know of no more distressing embarrassment than that which the families of inebriates often experience, who find themselves anxious but passive victims of a terribly destructive evil which they have no power either to avert or remedy. \* \* \*

"The question may be asked whether restraint, prolonged for a year or two, will cure dipsomania? The answer of science is, we believe, that this form of

insanity appears, in this respect, to follow the law of other forms of mental disease. It should be recollected that the cure is not undertaken in dipsomania till the disease has become chronic and deeply seated; but if there be no constitutional tendency to this or any other form of insanity, and the treatment is continued till the susceptibilities and strength both of the body and the mind become entirely normal, the cure is likely to prove permanent."

8. The report from the *Western Lunatic Asylum*, Virginia, embraces a period of two years.

	Men.	Women.	Total.
Patients treated from Oct. 1, 1865, to Oct. 1, 1867	841	190	437
Cured . . . . .	30	20	50
Died . . . . .	18	12	30

Deaths from cerebral diseases, 7; marasmus, 5; consumption, 3; disease of heart, 3; paralysis, 2; epilepsy, 2; dropsy, 2; pneumonia, congestion of lungs, exhaustive mania, typhoid fever, meningitis, and suicide, 1 each.

Dr. Stribling's report consists almost exclusively of numerical statistics.

9. Hitherto the *West Virginia Hospital for the Insane* has been in operation with but a comparatively small part of the building completed. Another section, which will accommodate 100 persons, is nearly finished; and there are patients enough to fill it who are now treated in the Virginia hospitals.

	Men.	Women.	Total.
Patients treated from Oct. 1, 1866, to Oct. 1, 1867	32	30	62
Cured . . . . .	8	4	12
Died . . . . .	1	0	1

10. In the course of the last official year of the *Eastern Lunatic Asylum* of Kentucky, a large additional building, 440 feet in length, and another of smaller dimensions, for the coloured insane, have been erected, but not fully completed.

"In a very short period of time," says Dr. Chipley, in closing his report. "Kentucky may boast of ample provision for the custody and care of all the insane within her borders, and I believe she will have the proud distinction of being the first State in the Union to meet in full her obligation to this most unfortunate class of her citizens."

	Men.	Women.	Total.
Patients treated from Oct. 1, 1866, to Oct. 1, 1867	170	124	301
Cured . . . . .	14	9	23
Died . . . . .	11	3	14

Died of phthisis, 7; exhaustion, 3; epilepsy, 2; *paralysie générale*, 1; injury (leap from railroad car), 1.

11. Within the last year the edifice of the *Western Lunatic Asylum* of Kentucky has been completed, adding considerably to the number of patients which it can accommodate.

	Men.	Women.	Total.
Patients treated from Oct. 1, 1866, to Oct. 1, 1867	187	146	333
Cured . . . . .	23	18	41
Died . . . . .	12	21	33

12. Additions to both wings of the *Northern Ohio Lunatic Asylum* are in progress. When completed, the capacity of the building for patients will be nearly doubled.

	Men.	Women.	Total.
Patients treated from Oct. 31, 1866, to Oct. 1, 1867	144	155	299
Cured . . . . .	39	42	81
Died . . . . .	8	8	16

Died of general paralysis, 2; chronic meningitis, 2; consumption, 2; maniacal exhaustion, 5; gangrene of lungs, epilepsy, inflammation of bowels, old age, and suicide, 1 each.

"During a greater part of the year," says Dr. Stanton, "our wards have been overcrowded. A larger number have received the benefit of the asylum than in

any former year, and yet several urgent appeals for relief have necessarily been refused. The progress already made toward the completion of the new wings gives promise of a speedy relief, for a time at least, from the embarrassments under which we have laboured, and the unpleasant duty of having to discharge the supposed incurable."

13. Only about one-half of the building of the *Michigan Asylum for the Insane*, as originally designed, has been erected. In the last biennial report, Dr. Tyler, the acting superintendent, alludes to the "entire inadequacy of the building, in its present condition," and says that "at least three hundred have, within the period covered by this report, been denied the advantages of the institution."

	Men.	Women.	Total.
Patients treated from Nov. 30, 1864, to Nov. 30, 1866	144	154	298
Cured . . . . .	—	—	43
Died . . . . .	—	—	32

Deaths from tuberculosis, 5; bronchitis, 4; pneumonia, 2; dysentery, 7; epilepsy, 4; exhaustion from acute insanity, 4; exhaustion from chronic insanity, 2; exhaustion from chronic insanity and abscess, 1; general paralysis of the insane, 1; peritonitis, 1.

The friends of Dr. Van Deusen will regret to learn that, compelled by impaired health, he has resigned the superintendency of this hospital—a post, the duties of which have been, to him, a labour of love.

14. Within the two years embraced by the report now before us from the *Iowa Hospital for the Insane*, the drainage of that hospital has been improved by the making of new sewers, and its convenient working enhanced by the introduction, at considerable expense, of water from a neighbouring stream.

	Men.	Women.	Total
Patients treated from Oct. 31, 1865, to Oct. 31, 1867	324	296	627
Cured . . . . .	79	59	138
Died . . . . .	46	39	85

"A large proportion of the deaths were due to the slow and gradual debilitating action of the nervous disease that produced insanity. Only seventeen patients died of acute disease. Consumption, epilepsy, chronic gastric and intestinal disorder, old age, and organic disease of the brain, were the causes of death in most of the other cases." One died suddenly of "obesity of the heart." "The insane are peculiarly subject to attacks of those gastric and intestinal disorders which prevail in the summer and early fall. No regimen, however strict—no precaution, however elaborate, can entirely prevent such disease." "The effect of exhaustion, exposure, and similar depressing causes," says Dr. Ranney, "in giving rise to nervous disease, appears to be well shown in some cases of discharged volunteer soldiers. Of this class we have admitted thirteen, all of whom evinced unmistakable traces of the rigours of military service. It will be no matter of surprise, I think, if this class appear prominently in our statistical tables for years to come."

15. From April 28, 1862, until she had her own hospital, Minnesota sent her insane to the State Hospital in Iowa, and a few of them, in 1866, to St. Vincent's Institute, in St. Louis, Missouri. On the 2d of March, 1866, the Legislature of Minnesota passed an act for the foundation of a State Hospital, which has been located on a farm of two hundred acres in St. Peter, Nicollet County. The general form of the ground-plan of the building is very similar to that of the New Jersey Hospital. Pending its construction, temporary buildings have been provided, and the hospital was opened on the 6th of December, 1866, under the superintendence of Dr. Samuel E. Shantz, of Utica, N. Y.

	Men.	Women.	Total.
Patients admitted to December 31, 1867 .	53	44	97
Discharged: cured, 10; eloped, 1; died, 2 .	—	—	13
Remaining . . . . .	—	—	84

Died of epilepsy, 1; apoplexy, 1.

P. E.



ART. XXX.—*A Treatise on the Principles and Practice of Medicine; designed for the Use of Practitioners and Students of Medicine.* By AUSTIN FLINT, M. D., Professor of the Principles and Practice of Medicine in the Bellevue Hospital Medical College, etc. Third edition; thoroughly revised. pp. 1002. Philadelphia: Henry C. Lea, 1868.

A THIRD edition of such a work, within three years of its original publication, furnishes sufficient evidence of the favour with which it has been received by those to whom it is especially addressed, practitioners and students of medicine. No doubt its smaller bulk, as compared with what has generally been regarded as the standard size of similar treatises, has constituted one of its attractions, especially for the second of the classes of readers mentioned. For them, indeed, it is no slight gain to possess a work upon the subjects it embraces, in which facts, results, and judgments abound, rather than theories, speculations, and opinions. If they seek for a comparison of views, and debates of mooted questions, they will find them in treatises of a wider scope and a more elaborate execution than this. But it must be admitted that to present such matters to the student's mind is much more apt to confuse and perplex than to enlighten him, or, still worse, to lessen the distinctness of his perception of the differences between truth and error. The student of science and art should, to a great extent, be instructed dogmatically, if he is to become a man of solid judgment and definite opinions; if every fact and doctrine presented by his teachers must first be submitted to the torture of a dialectic dissection, and received at last only as a possible, or, at most, a probable, proposition, he will perhaps become an expert medical critic, but never a good physician. We therefore conclude that the author of the work before us has wisely excluded elaborate discussions, and made himself the judge, in the reader's place, of the validity of the facts and the soundness of the opinions he promulgates.

The large clinical experience of Dr. Flint, and the careful record he has made of it, entitle him to speak upon many points with a higher authority than perhaps any other physician in this country; and the well-informed reader will not fail to observe the superiority of those chapters in his work which treat of diseases which the author has studied, over those which relate the experience of others, or discuss questions which can only be solved by the combined observations and reasoning of many physicians. The former are always clear, precise, and generally conclusive; the latter are often vague, imperfect, and sometimes illogical or contradictory. The defect just referred to is one that can seldom be avoided by a writer who is also a busy practitioner, and whose literary labours are so highly appreciated by the reading medical public as are those of Dr. Flint. Science moves rapidly forward, and the demand for new editions keeps so closely abreast of it, that the author who desires to preserve nothing obsolete and neglect nothing novel, has no light task in attempting to maintain his balance upon the two steeds he is riding at once. His labour is like that of attempting to piece out an old garment with new cloth. The patch does not always harmonize with its surroundings, and occasionally in a moment of colour-blindness, or of absence of mind, a discordant piece is inserted which shocks painfully the critical eye. Without metaphor, it is a hazardous task to modernize, rejuvenate, or "bring up to the day," a medical essay, without such a careful revision of the entire work as will preserve, or render more perfect, the original harmony between its parts.

It is unnecessary to describe or criticize in detail, a book which we so fully discussed upon its first publication; suffice it to say that it is a credit to its author and to American medical authorship, and that, apart from some few inconsistencies which may readily be pardoned in the discussion of such various subjects, and certain omissions, to have supplied which would perhaps have marred its special character as a "hand-book" of practical medicine, it is one of the best works of its kind for the practitioner, and the most convenient of all for the student.

A. S.

ART. XXXI.—*Vesico-Vaginal Fistula from Parturition and other Causes; with Cases of Recto-Vaginal Fistula.* By THOMAS ADDIS EMMET, M. D., Surgeon-in-Chief of the New York State Woman's Hospital, etc. etc. 8vo. pp. 250. New York: Wm. Wood & Co., 1868.

THIS handsomely-printed volume is dedicated to the author's instructor, Dr. J. Marion Sims, "and to the Lady Managers of the New York State Woman's Hospital." This fact is, of itself, noteworthy, as showing the march of intellect and freedom from *prejudice* in the present age. Some years since, we think it not unlikely, there might have been found ladies who, influenced by old-fashioned but now obsolete notions of prudery, might possibly not have felt complimented by being associated in the public mind with two such unpleasant diseases as vesico-vaginal and recto-vaginal fistula. "*Mais nous avons changé tout cela;*" and if the heart was already beginning to beat on the right side in Molière's time, we need not be surprised at any revolutions, moral or otherwise, which may occur in our physical and social economy during this boasted nineteenth century.

The introduction and first three chapters of Dr. Emmet's book appeared, almost in their present form, in the number of this Journal for October, 1867, (pp. 313-321). They are now republished with the addition of seventy-five illustrative cases and thirty-five wood-cuts, and make quite a handsome volume. The whole book is divided into eighteen chapters, distributed as to subjects in the following manner. The first three describe the ordinary causes of the lesion and the instruments employed in its cure, with general remarks upon the operative treatment. Chapters IV. to XII. inclusive treat of fistulæ involving the bladder in its various parts, and with different complications; Chapters XIII. and XIV. describe urethro-vaginal fistula, and the method of forming a new urethra by plastic surgery; Chapter XV. deals with recto-vaginal fistula, resulting from parturition; Chapter XVI. with vesico and recto-vaginal fistulæ, not resulting from parturition; Chapter XVII. describes certain congenital deformities of the pelvic organs and the operations for their cure; and Chapter XVIII. details three unclassified cases, one of death from pyæmia following an operation for vesico-vaginal fistula; one of death from uræmia after enlarging, for the relief of cystitis, the track of a pelvic abscess communicating with the bladder and vagina; and a third case in which the peritoneal cavity was accidentally opened, during an operation for vesico-vaginal fistula, without any bad consequences resulting.

Dr. Emmet's cases, several of which have been already published, are well told and deserve careful study from those who are interested in the important branch of surgery which they illustrate. One point on which we must differ from our author is as to his recommendation to treat vesical calculus in the female by vaginal section, in all cases. We believe that small stones and most foreign bodies should be removed by means of rapid urethral dilatation, which we have not found to be followed by incontinence of urine as dreaded by Dr. Emmet; larger calculi may advantageously be treated by lithotritry, and the vaginal section should, we think, be reserved for those of the largest size.<sup>1</sup>

We do not propose to enter into any extended examination of Dr. Emmet's labours, and indeed the fact that the most important part of his book has already been published in these pages, makes it unnecessary for us to do so. We may, however commend the volume to our readers as a valuable, and, so far as we can judge, a perfectly candid record, of the large experience of a careful observer, who has had certainly a very wide field for the study of the subjects upon which he has written.

We cannot praise the wood-cuts which are scattered through the text either for clearness of design or beauty of execution. The book is made easy for reference, by a full table of contents, and an alphabetical index. J. A., JR.

<sup>1</sup> Our readers will find several interesting cases bearing upon this point in the "*Annuaire de Médecine et de Chirurgie*, par MM. GARNIER et WAHU," for 1864. pp. 167-175.

ART. XXXII.—*Clinical Lectures on Diseases of the Liver, Jaundice, and Abdominal Dropsy.* By CHARLES MURCHISON, M.D., F.R.S., &c. &c. 12mo. pp. 556. New York: William Wood & Co., 1868.

DR. MURCHISON is so well and favourably known in this country, by his comprehensive treatise on "The Continued Fevers," that the announcement made some time since, that he intended to issue, in book form, his clinical lectures on Diseases of the Liver, was received here with pleasure.

These lectures were originally delivered before the class at the Middlesex Hospital, and four of them have already appeared in the *Lancet*, and parts of others in various of the medical periodicals of Great Britain. "It is not their object," our author says in his preface, "to set forth a complete account of the diseases of which they treat, but rather to put prominently forward the leading characters on which the diagnosis of these diseases depends, and in particular, to determine the diagnostic import of those signs and symptoms—such as enlargement of the liver, jaundice, dropsy, and pain—which are common to many different hepatic disorders, but the precise cause of which is too often unrecognized."

No one can be a successful clinical teacher who does not constantly keep this object in view—and his degree of success will depend upon his ability to do so. If we can judge from these lectures, Dr. Murchison must be both an agreeable and instructive teacher. Not confining himself to the case before him, he refers to other cases and reads their histories, and frequently exhibits to the class a specimen from the museum of the hospital, which illustrates some point in the morbid anatomy of the disease. We regret that our limits do not permit us to notice his book in detail. We shall content ourselves with giving a general idea of its plan, noting particularly the few points in which our author's opinions differ from those generally held.

The enlargements of the liver are divided first, into those that are painful, and, secondly, painless. This division, although, perhaps, better than Dr. Bright's, into smooth and irregular enlargements is not wholly unobjectionable, for some of the diseases which are usually unaccompanied by pain, may, under certain circumstances, become painful, and, on the other hand, among the cases reported in the book, will be found one in which a cancerous affection of the liver, usually a painful one, was entirely painless during its whole course. Jaundice, we are also told, is more apt to accompany the painful affections, which, although true in the greater majority of cases, is by no means so in all.

Among the cases reported, is a very interesting one of the waxy degeneration of the liver, and the remarks which accompany the history of this case are also exceedingly interesting. The lecture on hydatid cysts of the liver is a very instructive one. Dr. Murchison recommends very strongly that in any case where the diagnosis is well established, and the cysts, from their size, are creating uneasiness, that they should be evacuated by means of a fine trocar. He gives us one caution as to the method of performing this operation, and that is, that while the trocar is being withdrawn, pressure should be made upon the abdomen, so as to approximate its walls to those of the cysts, and in this way, prevent the dribbling of liquid from the trocar into the peritoneal cavity, to which he thinks the unfavourable result in some of the operations is to be attributed. Forty-six cases have been collected in which this operation has been performed, and a fatal result is said to have occurred only three times. There are few operations of any magnitude in surgery, which, if these statistics are to be relied upon, are as free from danger as this one. It is rather an interesting fact that twelve of these cases were found reported in Australian journals.

There is very little doubt that most of those who read these lectures will be very anxious to know their author's views of the pathology of jaundice. Two classes of cases are recognized:—

1st. Those in which there is no obstruction of the gall-ducts, and consequently, none to the excretion of the bile.

2d. Those in which there is such an obstruction.

There is, of course, very little difficulty in explaining the occurrence of cases which may be referred to the second head, and their dependence upon the re-absorption of bile is universally admitted.

The explanation of the first class of cases has given very much more difficulty. Frerichs explained their occurrence upon the supposition that the bile acids are reabsorbed and converted into bile pigment in the blood; a result which can be brought about artificially by the addition of sulphuric acid to them out of the body. Harley attributed to the liver the power of secreting the biliary acid, and of merely separating the bile pigment from the blood, and thought that in those cases in which there was no obstruction, there was an arrest of secretion, and consequently, an accumulation of the pigment in the blood. Dr. Murchison finds neither of these views entirely satisfactory. Dr. Harley's he condemns entirely, for if it were true in every case where there is diminished secretion of bile, there would be jaundice, which is notoriously not the case. For instance, neither a cirrhotic, cancerous, nor waxy liver can be assumed for a moment to be doing its full work, and yet in each of these cases, jaundice is either very slight or entirely absent. Dr. Murchison believes the true explanation to be that in health a certain amount of bile, including both the acids and the colouring matter, is constantly being absorbed from the intestines into the blood. The colouring matter in health is rapidly oxidized and undergoes an entire change, appearing probably in the urine as its pigment, but in disease this metamorphosis is arrested, and the pigment then stains the tissues. Dr. Murchison refers to the fact that the contents of the colon contain less bile than those of the small intestines, and that the excretions of certain animals are entirely colourless, showing that entire absorption has taken place. Thus, to quote his own words, "It is in the course of this osmotic circulation, that the constituents of bile are taken up into the blood, becoming themselves probably transformed in the process into the products which are eliminated by the lungs and kidneys, while, at the same time, they assist in the assimilation of the nutritive materials derived from the food. And here we have an explanation of those cases of jaundice where there is no impediment to the flow of bile from the liver. Under normal conditions, the bile that is absorbed is at once transformed, so that neither bile-acids nor bile-pigment can be discovered in the blood, and there is no jaundice. But in certain morbid states, the absorbed bile does not undergo the normal metamorphoses, but circulates with the blood, and stains the skin and other tissues."

This theory is of course only a modification of Frerichs', and does not explain the occurrence of the jaundice, which comes on suddenly, as the result of a violent emotion, as fright or anger. In these cases, we cannot assume that it depends upon arrested metamorphosis, there must be deranged innervation by which the blood corpuscles are disintegrated, and the hæmatine changed into bile pigment, or a substance closely resembling it.

Dr. Murchison believes that mercury possesses no cholagogue action, and explains the fact that the stools are bilious after the administration of mercury, simply by the increased peristalsis, to which it undoubtedly gives rise, preventing the absorption of bile, and hurrying on the contents of the intestines.

The mechanical execution of this work is excellent. It is illustrated by several diagrams, and is presented in a convenient form by the American publisher. We think that it will be found useful, not merely to the student but to the practitioner of medicine. To the latter, the numerous reports of interesting cases, ninety-five in number, most of which are published for the first time, will be of special value.

J. H. H.

ART. XXXIII.—*Sur l'Emploi du Phosphore en Médecine, et en particulier dans le Traitement de l'Ataxie Locomotrice Progressive.* Par le Dr. G. DUJARDIN-BEAUMETZ, Chef de Clinique à la Pitié, etc. etc. (Extrait du Bulletin Général de Thérapeutique, 1868.) 8vo. pp. 28. Paris, 1868.

*On the Use of Phosphorus in Medicine, and especially in the Treatment of Progressive Locomotor Ataxia.* By Doctor G. DUJARDIN-BEAUMETZ, Chief of Clinic at La Pitié, etc. etc. Paris, 1868.

DR. DUJARDIN-BEAUMETZ, after quoting several formulæ for the administration of phosphorus, says that he gives ten centigrammes of the following solution, contained in a capsule of gelatine, which is coloured, in order to avoid the effects of solar light. R.—Chloroform, 1000 grammes; phosphorus, 1 gramme. Each capsule contains one milligramme of phosphorus. In an appendix to his paper he states that he now employs, in preference, capsules of phosphuretted oil, prepared after the above manner.

He submits a detailed account of two cases treated with phosphuretted oil, and two cases with capsules of phosphuretted chloroform. No one of the cases was cured, but the condition of all was improved. The author believes that the facts observed in these cases afford ground to expect that phosphorus may prove to be a highly valuable means of treating ataxies.

Dr. Dujardin-Beaumetz states that we find in all cases of progressive locomotor ataxia, almost identically the same lesion of the posterior columns of the spinal marrow, an alteration characterized chiefly by the proliferation of the conjunctive element, and destruction of the nerve tube. The nerve tube obstructed by the progressive augmentation of the connective tissue changes its form, becomes varicose; its sheath permits its contents to escape, and the constituent parts of the disorganized nerve tube gradually undergo regressive metamorphoses. At the same time that the nervous element disappears, the substance recently studied under the name of *protagon*, which contains a large quantity of phosphorus, and which is resolved into a fatty acid and *neurine*, which itself contains a great quantity of phosphorus.

Applied locally, phosphorus has a peculiar action, which has been studied by M. Ranvier. He placed fragments of phosphorus under the skin, and in the substance of the muscles of different animals (frog, guinea-pig, and rabbit), and never saw inflammatory phenomena developed about or around the morsels of phosphorus. Besides, if a minute cube of phosphorus was introduced into one part, and a foreign substance into another part of the same animal, even when the foreign substance is taken from a living organism, the phenomena of inflammation are always set up near the latter, while around the phosphorus they are scarcely appreciable. Dr. Dujardin-Beaumetz repeated these experiments with the same results. In experimenting on the toxic action of phosphorus, he was astonished to find, in almost all animals that fell victims to this poison, no trace on the surface of the stomach or intestine, of ulceration or active inflammation, from which he infers that the local action of phosphorus is very slightly irritant.

M. Ranvier has demonstrated that phosphorus is not only slightly irritant when introduced into the tissues beyond contact with atmospheric air, but also that, in contact with the cells, it takes from them the property of undergoing formative irritation, opposes the multiplication of cellular elements, and in this way prevents that mode of inflammation which the Germans have called interstitial, the principal character of which is the multiplication of the cellular elements of the connective tissue of stroma. So much for its local action.

Administered internally in small doses, phosphorus produces phenomena of excitation, particularly in the general nervous system—increased activity of movement, more suppleness, more agility, and increased strength; but it causes no excitement of the circulation. The pulse of a man to whom 10 milligrammes of phosphorus were administered (10 capsules of phosphuretted oil of 1 milligramme) was observed every quarter of an hour during two hours. Before taking it the pulse was 68; at the moment of ingestion, 70; then afterwards 70, 68, 66, etc.; and at the last quarter of an hour, 65. In this case the pulse,

instead of being increased, was rather diminished in frequency. These experiments were often repeated, sometimes with a slight augmentation, and sometimes with a slight diminution of the pulse, so that Dr. Dujardin-Beaumetz infers that in small doses (from 1 to 10 millegrammes), phosphorus has no very marked influence on the circulation. He exhibited to the Society sphygmographic traces which sustain this opinion. Nor is the temperature much affected.

Various authors assert that phosphorus is a most powerful aphrodisiac, but this is not always manifested. In small doses, phosphorus produces great excitement of the nervous system, increase of muscular vigour, and sometimes an excitement of the genital organs, without any great increase of the circulation or temperature.

In view of the physiological effects of phosphorus, and the lesions of the spinal marrow in ataxia, phosphorus acts in progressive locomotor ataxia as an excitant, as a tonic of the nervous system; and in the opinion of the author, as well as of M. Taignot, its action may be compared, in certain nervous affections, to that of iron in anæmia and chlorosis. If the one supplies, in diseases of the blood, an element indispensable to its richness and hæmatin, the other furnishes to the nervous system an indispensable element, which all chemists find to constitute a considerable part of the nervous substance. But in ataxia we may go further, and ask, resting on the experiments of M. Ranvier, whether phosphorus, a constituent of the nervous system, does not, by its presence in the spinal marrow, restore a substance which has a tendency to disappear, and also prevent proliferation of the conjunctive element, which is, in summary, nothing but the sclerotic of the spinal marrow.

Should experimental inquiry fully establish the truth of Dr. Dujardin-Beaumetz's observations and conclusions, he will have credit for having added to the means of relieving a hitherto intractable form of disease. W. S. W. R.

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ART. XXXIV.—*Diseases of Children*. A Clinical Treatise based on Lectures delivered at the Hospital for Sick Children, London. By THOMAS HILLIER, M. D., etc. etc. 8vo. pp. 402. Philadelphia: Lindsay & Blakiston, 1868.

EVEN if the book before us contained more that was open to criticism than it really does, we should be disposed to deal gently with it, for the late journals from England bring the announcement of Dr. Hillier's death, which took place rather suddenly, on the 7th of November last, at the age of 37.

Dr. Hillier has, we believe, published but one other volume, *The Handbook of Skin Diseases*, which has been favourably noticed by several of the medical journals, and the book before us will, we think, increase his reputation.

Dr. Hillier tells us in his preface that it was originally his intention to publish his lectures as delivered to his class at the hospital, but finding that he had collected much new and valuable material, he determined to abandon the lecture style and to present to the reader a series of short monographs on the more important diseases of children between the ages of two and twelve years. He gives a clear and succinct account of the pathology, symptoms, and treatment of those diseases which he says have been more particularly brought to his notice at the Children's Hospital; but there are many diseases which must be as frequent in England as here, which are not even referred to—we allude particularly to whooping-cough, measles, and the diseases of the alimentary canal—so that the work cannot be considered a complete clinical treatise.

Dr. Hillier's opening chapter on the method of examining sick children contains much valuable information. We are convinced, as the result of an experience extending over several years, that it is not more difficult to arrive at a correct diagnosis in the diseases of children than in those of adults; the confidence of the child once being secured, our investigations may, in the majority of instances, be easily made.

Our author is firmly convinced that pseudo-membranous croup is nothing but laryngeal diphtheria. In reference to this point we will quote his own words, at p. 141. "I can detect no distinction between membranous croup and laryngeal diphtheria. . . . It is a very frequent occurrence for a patient to be brought to the hospital suffering from diphtheria, with the statement that one or two members of the family, or children in the same house have recently died of croup. It is by no means an uncommon thing for patients to be here, whose case one physician considers to be croup, whilst another calls it diphtheria; or a case is admitted and at first called croup, but when albumen is found in the urine, or a slight patch of exudation seen in the throat, it is called diphtheria." There is certainly great analogy between the two diseases, but the symptoms in croup are severe in proportion to the amount of false membrane, which is, as is well known, not the case in diphtheria. Whereas on the other hand the symptoms of blood poisoning are most marked in the latter, it is rare that complete disintegration of the blood takes place in membranous croup, while it is a common condition in diphtheria.

The reader is referred to the *Handbook of Skin Diseases*, for a full description of these affections as they occur in children; the remarks which are made under this head are judicious, and the treatment recommended will generally be found efficacious. We must object, however, to the name lupus-psoriasis as applied to a variety of lupus. Psoriasis, it is generally conceded, occurs in those who are otherwise healthy; lupus, on the contrary, in the scrofulous, and we can scarcely conceive it possible, that any disease of the skin should present any other than the most indistinct resemblance to both these diseases.

Additional testimony, if any is really needed, to the efficacy of the bromide of potassium in the treatment of epilepsy, is also to be found in this book. In children it seems to have the same power as in adults—that of completely controlling the paroxysms. 5 grains every two hours was given to a child 3½ years, and 10 grains, at the same intervals, to a child 10 years old, in both cases with advantage.

In opposition to Trousseau, Dr. Hillier maintains that rickets and mollities ossium are not the same disease, and says "the anatomical characters are quite distinct; both diseases are, it is true, characterized by a want of lime salts in the bones. In mollities there is absorption of the earthy part of completely formed bone; the bone becomes more and more porous and brittle, whilst the cancelli become filled with a jelly-like very vascular medulla. In rickets there is abnormal growth and extensive preparation for the development of bone, with an arrest of progress of ossification." He admits, however, that in rare cases absorption of bone may take place in rickets. The progress of the two diseases likewise furnishes us with points of distinction: in mollities the case generally terminates in death; in rickets recovery is the rule unless the patient be carried off by some intercurrent disease, to which, of course, he opposes but a feeble resistance. The chapters on pneumonia, tubercular meningitis, and other cerebral affections, are carefully written.

The book is handsomely issued by the American publishers. If we have a fault to find, it is with the extremely fine print used in the reports of cases.

J. H. H.

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ART. XXXV.—1. *Reports of Hospital Cases*. By WILLIAM MACCORMAC, M.A., M.D., etc. Dublin: John Falconer, 1868. 8vo. pp. 24.

2. *Observations on Amputation of the Thigh, and on the Merits of that Operation as compared with Excision of the Knee*. By WILLIAM MACCORMAC, M.A., M.D., etc. Dublin: John Falconer, 1868. 8vo. pp. 20.

1. DR. MACCORMAC, who is one of the Surgeons to the Belfast General Hospital, is already well known in this country as one of the brilliant corps of surgical writers whose contributions to the *Dublin Quarterly Journal of Medi-*

*cal Science* have gained for that periodical its reputation as *the surgical journal (par excellence)* of the English language.

The first of the pamphlets the titles of which we have given above, contains a "Case of Injury of the Spine" (which was originally published in the *Dublin Journal*); a "Case of Popliteal Aneurism, treated by Compression;" and "Cases of Strangulated Femoral Hernia."

The case of spinal injury is of great interest. The vertebra affected was the seventh cervical, and the post-mortem examination (the patient lived fourteen days) showed that had any operative treatment been employed, it would necessarily have resulted in failure. In the case of popliteal aneurism, a cure was effected in a few days by pressure completely arresting the circulation, and forced flexion; the patient being kept most of the time in a state of anæsthesia.

The cases of strangulated hernia were three in number, recovery following the operation in two, and the third terminating fatally. In all the cases the hernial sac was opened. The truths conveyed in the following sentences are so important, and yet so commonly ignored, that they cannot be repeated too often: "The more one sees of hernia, and especially of femoral hernia, the more, I think, one becomes impressed with the necessity for early operative interference. It is not the operation, but want of operation, that proves fatal. Ill-directed, and too often repeated efforts at taxis, conjoined with unnecessary delay, are only too frequently the fatal elements present in hospital cases of hernia."

2. Dr. MacCormac's second pamphlet is a reprint from the number of the *Dublin Journal* for August, 1868. The case of amputation of the thigh for disease of the knee-joint, which forms the text of the paper, is well told, and is illustrated by a fine lithographic plate. Dr. MacCormac's remarks upon the comparative advantages of excision and amputation are sensible and judicious, and are expressed with the modesty which always accompanies true independence of judgment. The Irish school of surgery has been of late years so committed to the superiority of excision, through the influence of Mr. Butcher's writings, that it is quite refreshing to hear from the Belfast Hospital a word on the other side of the question.

J. A., JR.

ART. XXXVI.—*Klinik der Ohrenkrankheiten. Ein Handbuch für Studierende und Aerzte.* Von Dr. S. Moos, praktischer Arzt und Docent an der Universität in Heidelberg. Mit 26 in den Text Gedruckten Holzschnitten. 8vo. pp. 348. Wien: Wilhelm Braumüller, 1868.

*Clinic of the Diseases of the Ear. A Manual for Students and Practitioners.* By Dr. S. Moos, Practitioner of Medicine, etc. With 26 Wood-cuts. Vienna, 1868.

DURING the few years that have elapsed since Dr. Moos translated into German Toynbee's work on the diseases of the organ of hearing, so many important advances have been made in the knowledge of the pathology of those diseases, and in an acquaintance with their proper management, that instead of incorporating them in a new edition of the translation of Toynbee, he decided upon preparing an independent work—presenting to the student and young practitioner, in continuous narrative, a fair exposition of the present condition of aural medicine, derived from his own observations and those of the most authoritative of those who have made this branch of the healing art their special study.

Dr. M. has well fulfilled his task, and presents, in the volume before us, a very useful and reliable manual, adapted as well to the wants of the young practitioner as those of the student. He has described with great clearness the true character of the different morbid conditions to which the several portions of the auditory apparatus are liable, the symptoms to which they give rise, their most common causes, with their usual course and terminations, at the same time indicating a general outline of the plan of treatment, which experience



has shown to be most successful in their amelioration or cure. The acquaintance of Dr. M. with the writings of the best authorities on the diseases of which he treats is shown by his frequent and appropriate references to them.

The consideration and treatment of the diseases of the ear are, for the most part, made, by European practitioners, and to a certain extent also by those of our own country, a strict specialty, especially by such as are located in large cities. In our new settlements, however, these diseases must necessarily fall to the care of the general practitioner. To prepare these for their correct diagnosis and treatment, a manual like the one before us is well adapted. We have little doubt that a translation of it into English would be favourably received.

D. F. C.

ART. XXXVII.—*A Manual of the Pathology and Treatment of Ulcers and Cutaneous Diseases of the Lower Limbs.* By JOHN KENT SPENDER, M. B., Lond., Surgeon to the Mineral Water Hospital and to the Eastern Dispensary, Bath. 8vo. pp. x., 89. London: John Churchill & Sons, 1868.

SIR WALTER SCOTT tells us somewhere of a certain country practitioner, who in the treatment of disease relied almost exclusively upon "the two simples—calamy and lodomy." We are involuntarily reminded of this worthy son of Æsculapius, by a perusal of the slender volume, the title of which we have given above.

"Chalk ointment," and a tight bandage made of "domette flannel," are the simple means with which Mr. Spender proposes to revolutionize the treatment of almost all the surgical ills which the human leg is heir to. The former acts by producing an artificial scab, and the latter, in the author's words, "approximates the structures to their natural form and functions, and thus introduces the healthy action required."

Mr. Spender's pathology is as compendious as his therapeutics. "It is possible," he says, "to arrange all ulcers of the lower limb under two orders, determinable by the existence or non-existence of phlebeetasis"—or, in other words, some ulcers *are* dependent upon varicose veins, and the rest *are not*. For the former, the only proper treatment consists in the use of a solution of nitrate of silver and the application of chalk ointment and a tight bandage (always made of domette flannel); and for the latter, the same, with the administration of bichloride of mercury and iodide of potassium (with or without iron) in cases accompanied with a syphilitic taint, and the same drugs, omitting the mercurial, in those dependent on a strumous condition.

Wounds are to be treated with the nitrate of silver solution, chalk ointment (in this case combined with benzoate of zinc ointment) and a domette flannel bandage; burns and scalds, on the other hand, may be best cured with a domette flannel bandage and chalk ointment.

As Mr. Spender devotes five pages to a minute account of how he applies a bandage to the leg, we are led to suppose that this is a point upon which British surgeons generally are ignorant. Indeed, we have our author's assurance that the successful bandaging of a leg is by no means a feat of easy accomplishment, "and probably this difficulty is the chief reason why preference is often given to adhesive plaster, as this sticks and remains wherever it is put."

Strange as it may appear, every ulcer does not at once get well, even when treated with chalk and domette flannel. "The most insuperable hindrance to the healing of an ulcer of the leg arises out of that universal degradation of tissue which is associated with chronic alcoholism. Any drunken, dissolute fellow, who asks a surgeon to cure a number of sloughy green holes on the skin of his leg, may as well be told at once that it is nearly impossible."

The last chapter of Mr. Spender's manual is devoted to "a sketch of diseases of the skin as they affect the lower limbs," and we scarcely need say that the most successful treatment for many of these consists in the use of chalk ointment and the application of a domette flannel bandage.

Mr. Spender's style is usually sententious, and occasionally picturesque. As an example of the former quality we may cite a sentence from Chapter VI.: "As disease is always a deviation from health, so the cure consists in the restoration of the original state;" and as specimens of his word-painting, we may quote from page 64, where he calls an ulcer "a bit of rebellious pathology;" and from page 78, where we find something in a foot-note about "the cold, clammy, purple legs of young women suffering from chlorosis."

Mr. Spender indulges in frequent denunciations of empiricism and empirics; in his condemnation of such persons he has our entire sympathy. We would suggest, however, that he should be less hard upon Messrs. Syme, Holt, Gay, and Spencer Wells, than he seems disposed to be (pp. 64-66); for these gentlemen, though ignorant of the merits of chalk and domette flannel, have yet really been of some service to surgical science, and should not be too severely repressed. J. A., JR.

ART. XXXVIII.—*Vita di Carlo Botta*. Scritta da CARLO DIONISOTTI. 8vo. pp. 564. Torino: Tipografia G. Favale e Comp. 1867.  
*Life of Carlo Botta*. Written by CARLO DIONISOTTI.

THE name of Botta ought to be cherished by every citizen of our republic as the first to write a history of the war of American Independence, and to exhibit its struggles and successful termination for an encouragement and example to his own countrymen and to the people of Europe generally. In the same enlightened spirit were composed his several histories of Italy and his essays on Political Economy and Free Institutions. But we are not called upon to speak here of his career as historian, publicist, and legislator. The special claim on our notice in these pages comes from the fact, not generally known, that Botta studied medicine, took his degree, and served for some years as a physician in the French armies in Italy during the time of the republic. A brief notice of his professional studies and contributions to medical science will be at least new to our readers, apart from any intrinsic merit in the subjects themselves. We shall gather all the needful particulars from Signor Dionisotti's biography, which is written in a kindly but impartial spirit, and with the requisite fulness.

Charles Joseph William Botta was born in November, 1766, at St. George Canavese, Piedmont. His early years were spent under the paternal roof, during which period his father, a physician of some note, was his principal instructor in elementary learning. When thirteen years old he was sent to Turin and entered the College of the Provinces of the Royal University, where he was a student for the next ten years, and took his degree of Doctor of Medicine in 1789. During part of this time young Botta was a teacher as well as learner. He early directed his attention to the study of medicine, the practice of which had been continued in his family for five successive generations. His strongest predilection was for botany, in which he would have become distinguished if political events had not interfered with the quiet pursuits of study. After having been made a licentiate in 1785, when he was nineteen years of age, he was appointed to the office of recapitulator to the college alumni of the younger classes, a distinction conferred on the one who had been most successful in his studies. He gave, in addition, private lectures, which were attended by such a concourse of students that he was obliged to limit the number of admissions.

At the period of his graduation, 1789, Dr. Botta was gladly received as a contributor to a Journal of Science, Literature, and the Arts, edited by Giobert and Gialio. This journal was of short duration—from 1789 to 1791—and was followed by another periodical called *Bibliographical Commentaries*, under the same editorial direction, to which he contributed a number of papers. In the second volume of the *Commentaries* he presents an outline of Rush's "Medical Inquiries and Observations."

Among the minor writings of Botta, his thesis on the curative powers of

music may be mentioned. He was himself passionately fond of music, and played well on the flute, and hence he could speak with feeling and appreciation of this seldom employed agency in therapeutics. Here we may be allowed to express our regret that one of the earliest and largest contributors to this journal, and whose writings have won for him so extended a reputation,<sup>1</sup> should not, long ago, have brought out a work on the medical history and application of music, for which he has collected abundant materials.

Botta did not continue long in the peaceful walks of professional life. Yielding to the epidemic rage for universal liberty which broke out with the French revolution of 1789, he became a member of a secret club with a view of revolutionizing Piedmont. As generally follows the existence of such associations, it was soon revealed to the government, and he, in common with the rest, were imprisoned for two years, and tried for their lives. Botta barely escaped the death sentence; and, finding himself an object of suspicion to the powers that were, he expatriated himself and went to Switzerland, and thence to France, taking up his abode at Grenoble. In 1796 he received the appointment provisionally of physician to the ambulance department of the French Army of the Alps, afterwards called by the more historic and famed name of Italy. His first services were in the military hospital at Gap and at Susa, and, following the army now under the command of young Bonaparte, he was placed in charge of the hospital at Pavia. He was in Venice when the victorious French general and conqueror of Italy made over this ancient republic and its territories to Austria by the treaty of Campo Formio—a measure, the iniquity of which was denounced by Botta in the strongest terms of indignation and reproach. From Venice he was sent to the island of Corfu to take charge of the French hospital there, in which he introduced many needful reforms. Every opportunity was turned to account for his gaining a knowledge of the topography, natural history, and climate of the island, which, together with that of its medical constitution, he embodied soon after in a work entitled the *Natural and Medical History of the Island of Corfu*, 1798. From Corfu he was transferred to the military hospital at Tirano in the Valtellina, and thence to Sondrio and Morbegno. Here he published several papers; among others, one on nitric acid as a febrifuge. The author made numerous and successful trials of this remedy in the army of the Alps and in that of Italy, in intermittent fevers of an obstinate character, and especially in the sequelæ of hospital or typhus fever. The practice of giving the nitric acid in periodical fevers has been renewed of late years in our own country. Hoffman and Ferriar had long ago told us of its utility in typhus fever. The last production of Botta's pen on medical subjects is a memorial addressed to the authorities of Grenoble on the reforms required in the third military hospital of that city. On this occasion he urges strenuously the necessity of a convalescent depot entirely separated from the hospital. Our readers are aware that after the lapse of nearly seventy years a measure of this kind has been carried into effect quite recently in England. The year 1800 was an eventful one for Botta. In it he took to himself a wife, and at the same time he abandoned the profession of medicine, after having served in six campaigns with the armies of the Alps and of Italy, and for the most part with the troops in advance. Henceforth, living in Paris, he gave himself up for the most part to his favourite studies of history, political economy, and legislation. For some years he took an active share in public affairs as a deputy to the Corps Legislatif at Paris from Piedmont during the period of its incorporation with France. Botta died in Paris, in the year 1837.

J. B.

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<sup>1</sup> Dr. R. La Roche.

ART. XXXIX.—*The Medical Formulary*: being a Collection of Prescriptions derived from the Writings and Practice of many of the most eminent Physicians in America and Europe, together with the usual Dietetic Preparations and Antidotes for Poisons; to which is added an Appendix on the Endermic Use of Medicines, and on the Use of Ether and Chloroform. The whole accompanied with a few brief Pharmaceutical and Medical Observations. By BENJAMIN ELLIS, M. D., late Professor of Mat. Med. and Pharmacy, in the Philadelphia College of Pharmacy. *Twelfth edition, carefully revised and much improved.* By ALBERT H. SMITH, M. D., Fellow of the College of Physicians of Philadelphia, Lecturer on Obstetrics to the Philadelphia Lying-in Charity, etc. 8vo. pp. 374. Philadelphia: Henry C. Lea, 1868.

THE twelfth edition of this work comes to us with its value increased by the judicious alterations of the present editor. He has made room for many new formulæ by omitting such old ones as seemed of least importance and those remedies which have fallen into disuse. These added formulæ are conveniently distinguished by brackets. The posological table has been carefully corrected, and the doses of some articles divided in reference to their therapeutic application. In two new sections we have an appropriate grouping of "Antemetics," or remedies available for the diminution of gastric irritability, and of the various "Disinfectants" now employed. Among the latter, carbolic acid seems to us to possess more value than is here assigned to it. Brief reference is made to the Inhalation of Atomized Fluids and the amounts of these which should be employed; also, to the mode of using Thudichum's Nasal Douche. The following method of introducing the nozzle of the hypodermic syringe is recommended by the editor as much "less painful than when the needle is slowly and gently insinuated, and much less likely to be followed by swelling and redness than when the fluid is inserted very near the surface." "Pinch up the skin as far as possible, *tightly* between the thumb and forefinger of the left hand; then *instantly* plunge the needle of the instrument deep down into the cellular tissue, at an oblique angle, nearly to the hilt of the syringe; then *slowly* expelling the fluid, press the finger upon the skin over the needle as it is withdrawn." The list of dietetic preparations has been much improved by the addition of several recipes for concentrated nourishment, which will be of material service to the physician in difficult cases. This is one of the most useful sections of the book. In order to secure rapidity of action and economy of material in the administration of anesthetics, Dr. Smith employs the following method, which appears to be efficient and safe if care be taken to admit a proper quantity of air: "In a large India-rubber ball, such as are sold in the shop for footballs, say about six inches in diameter, cut an opening large enough to receive the face from the chin to the bridge of the nose, shaping it so that when adapted to the face it will fit closely, there being a notch at the upper portion in which the upper part of the nose will rest, leaving the eyes clear of any contact with the inhaler." The whole is to be lined with patent lint within about an inch of the margin, the lining being fastened by linen thread or silver sutures *partially* carried through the walls of the ball. It is then ready for use, and has the additional advantages of being easily rolled up and carried in the pocket, of presenting a large evaporating surface with no external evaporation, and of being readily kept in position over the face without allowing the anæsthetic to come in contact with the skin.

A new feature of this edition will be found in a full index of diseases, with references to the numbers and principal ingredients of the particular formulæ applicable to each.

Accuracy of text is indispensable in a book of prescriptions, and the few errors which we notice are unimportant.

E. R.

# QUARTERLY SUMMARY

## OF THE

### IMPROVEMENTS AND DISCOVERIES

#### IN THE

### MEDICAL SCIENCES.

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#### ANATOMY AND PHYSIOLOGY.

1. *Complete Obliteration of the Celiac and Mesenteric Arteries; the Viscera receiving their Supply through the Extra-Peritoneal System of Vessels.*—Dr. JOHN CHIENE, Demonstrator of Anatomy University of Edinburgh, records (*Journal of Anatomy and Physiology*, Nov. 1868) a very interesting and probably unique case of this, in which there was an obliteration of the three anterior visceral branches of the abdominal aorta at their origin, and a consequent enlargement of the secondary anastomoses for the supply of the viscera: the stomach, liver, spleen, pancreas and duodenum being supplied from the left lower intercostals, and from the left renal and supra-renal arteries which inosculated with the lumbar arteries on the same side; the remainder of the intestines receiving its supply from the internal iliacs through a large plexus surrounding the rectum, except the cæcum and ascending colon, which received blood from the last dorsal artery on the right side.

The case presents several interesting practical aspects.

"1. It confirms the statement that, between the visceral and parietal branches of the abdominal aorta, a free communication exists through the sub or extra-peritoneal system of arteries, first systematically described by Prof. Turner, in the *Brit. and For. Med.-Ch. Rev.* for July, 1863.

"2. Enlargement of this system of arteries, not only in the abdomen proper but in the pelvis, may take place to such an extent as to become the channel of blood supply to the abdominal viscera when their main arterial trunks are obliterated.

"3. It establishes the important practical point that a direct arterial channel exists by which the blood can be drawn directly from the abdominal viscera by the employment of depletory measures to the walls of the abdomen. Thus, in inflammation of the cæcum, the arterial anastomosis between the last dorsal artery and the ileo-colic branch of the superior mesenteric, enlarged in this instance, but always present, enables the physician, if he considers it advisable, to draw blood directly from the inflamed viscus; and in inflammation of the kidneys the anastomoses between the renal and lumbar arteries (specially those branches of the renal which, passing through the substance of the organ, pierce the capsule and supply the surrounding fat), explain easily and satisfactorily why cupping over the loins in inflammation of the kidneys is of such undoubted benefit.

"4. It is evident that the anastomoses in the pelvis between the internal iliac and mesenteric vessels, enlarged in this instance for the supply of the viscera, would be one of the principal channels of blood-supply to the lower limbs in occlusion of the lower part of the aorta from disease, or as the result of ligature. Here the current of blood was reversed, the blood flowing from the pel-

vis to the viscera, while in occlusion of the aorta the blood would pass through the mesenteries into the pelvis, and thence into the internal iliaes to the lower limbs. In ligature of the common iliac, this anastomosis between the mesenteries and internal iliaes would probably be enlarged.

"This case is therefore interesting to the surgeon in reference to ligature of the aorta. It does not, I apprehend, bear directly on the important question: Is there any rational hope of recovery after this operation? The arterial changes consequent on disease are gradual, and they therefore do not give us much assistance in estimating the effect that would be produced by the sudden stoppage of the current of blood, as in ligature. It will, however, help to solve the as yet unsettled point, by what channel does the blood reach the pelvis and lower limbs after obliteration of the aorta? That it does so cannot be doubted."

Dr. C. refers to four cases which place this beyond doubt. 1. Dr. Goodisson's (*Dublin Hospital Reports*, ii. 1818); 2. Dr. Monro's (*On Aneurism of Abdominal Aorta*, Edin., 1827); 3. Montiero's case of ligature of aorta, in which the patient lived ten days after the operation (*Schmidt's Jahrbuch*, 1843); and 4th, Dr. Murray's case (*Med.-Chirurg. Trans.*, xxix. 2d series, and number of this Journal for July, 1865, p. 164).

For the mode in which the circulation is carried on in cases where the aorta has been obstructed above the origin of the cœliac axis, we would refer our readers to the case reported by Dr. Meigs on page 33 of the present number of this Journal, and Dr. West's case, published in the *Transactions* of the College of Physicians of Philadelphia, vol. ii. p. 194.

2. *Is the Eustachian Tube opened or closed in Swallowing?*—The late Mr. TOYNBEE maintained that the faucial orifice of the Eustachian tube is always closed, except momentarily, during the act of deglutition, or when air is forcibly blown through it. Prof. CLELAND, of Galway, who has been investigating this question, adduces evidence (*Journ. of Anat. and Phys.*, Nov. 1868) which he thinks conclusively proves that the Eustachian tube is usually open, and is momentarily closed in swallowing.

3. *Innervation of the Heart from the Spinal Cord.*—As it had not yet been proved that irritation of the spinal cord is able to directly quicken the heart apart from its secondary action on the heart's movements through the altered blood pressure, the brothers CYON performed a number of experiments to settle this question. They divided the splanchnic nerves, the cervical sympathetics, vagi, and spinal cord at atlas, and found that on irritating the cord the heart's action was quickened, but the blood-pressure remained unaltered. (They had divided nearly all the vasomotor nerves of the body.)

This experiment brings out the interesting fact that the heart's action may be accelerated without producing any increase of the arterial tension; that is, without any increase of the work performed by the heart. And a series of similar experiments showed for the first time that irritation of the spinal cord can increase the frequency of the heart's contractions independently of change in the blood-pressure. They moreover found that all the nerves—which convey the influences of stimuli from the spinal cord to the heart when the former is irritated—pass through the last cervical and first dorsal ganglia. Irritation of the cord produced no effect on the heart when the splanchnics, cervical sympathetics, and vagi were divided, and these ganglia removed on both sides. They further found that direct irritation of the third branch of the inferior cervical ganglion (counting from within outwards) in rabbits, and of the first branch in the dog, quickens the heart's movements without influencing the blood-pressure. They have therefore proved, by direct experiment, that there are nerves connecting the heart with the brain, which when irritated directly influence the heart so as to quicken its action.—*Journ. Anat. and Phys.*, May, 1868, from *Reichert's Archiv.*, 1867.

4. *Variations in the Excitability of Nerves and the Nerve-tissue Change.*—According to RANKE, the nerve contains within itself a store of substance at

whose cost it maintains its excitability, the duration of the excitability being proportionate to the amount of substance stored up. The substance consists of oxidizable and oxidizing constituents; their presence within the nerve renders it for a certain time independent of all external nourishment, although of course for its continued life it requires external supplies of oxidizable matter and oxygen. The nerve is capable, by means of chemical processes going on within it, to modify its excitability. Such changes occur during the continuance of nervous work, and result in a rise of excitability above, or a fall below, the normal, and coincidentally we notice a change from a neutral or a weakly alkaline to a progressively increasing acid reaction. The appearance of the acid bodies is the cause of the variations in nerve excitability, which can be artificially imitated by acidifying living nerves, the first action of acids being to increase, and the ultimate action to diminish, nerve excitability. The acids which during nervous work, induce the changes in excitability are to be reckoned among the causes of nervous fatigue (*ermüdende substanzen für den nerven.*) The chemical processes which occur during the normal fatigue of nerves occur on the death of nerves, which, like nervous activity, is connected with an acid formation in the nerve substance. During its vitality the nerve exhales carbonic acid; as this gas possesses in high degree the power of diminishing the excitability of nerves, it probably may, under certain circumstances, be one of the causes of nervous fatigue.—*Journ. Anat. and Phys.*, Nov. 1868.

5. *Differences in the Chemical Reaction of the Tissues.*—Dr. JOHANNES RANKE, in the concluding chapter of his recent work (*Die Lebensbedingungen der Nerven nach Untersuchungen aus dem Laboratorium des Reisingericanium's in München*), makes some statements which cannot fail to interest histologists. He says:—

In a weak ammoniacal solution of carmine we have a delicate reagent, which enables us to point out with beautiful accuracy the differences in chemical reaction of the tissues. Beale had, as Ranke clearly and fairly points out, advanced the supposition that the staining of those portions of tissue which he designated germinal matter, might be due to their acid reaction. The truth of this supposition is, we think, now proved beyond dispute by Ranke. We thus have it easily demonstrated to us that, while the axis cylinder of nerves is intensely acid, the reaction of the white substance of Schwann is decidedly alkaline; similarly in other tissues endowed with electro-motive power, we have demonstrated to us regular differences in chemical reaction, or regular arrangements of acid and alkaline constituents. The author thinks that he is justified in considering the regular chemical differences in the tissues as the source of their regular electro-motive properties.—*Journ. of Anat. and Phys.*, Nov. 1868.

6. *Physiology of Language.*—Dr. HUGHLINGS JACKSON does not attempt to localize the seat of the faculty of language in the brain. His theory regarding the function of the brain is—that in most people the left half of the brain is the leading side—the side of the so-called “will,” while the right half is the automatic side.

7. *On the Artificial Formation of Organic Substances.*—C. GREVILLE WILLIAMS, Esq., F. R. S., in concluding an address on the above subject before the Royal Institution of Great Britain (*Proceedings of the R. I.*, May 8, 1868) asserted that there was no natural barrier between organic and inorganic chemistry, which he maintained had been amply proved by instances he had brought forward. He said that they had studied together that evening several cases where, starting from inorganic matter, they had ascended step by step until they had reached some of the most complicated bodies secreted by animals and vegetables. What, he said, could be more distinctly inorganic than nitrogen, carbon, and oxygen? What more distinctly an animal secretion than urea? What more completely inorganic than acetylene? What more distinctly vegetable in origin than coumarin? Chemists have then, so far, done what a very few years ago would have been regarded as possible only by aid of the vital force. A true organized substance, he said, is so definite that it is generally

crystalline. But when we come to the tissues we are dealing no longer with organic substances, but with organized beings, and feel that we are approaching the barriers which separate the study of life from the study of matter. The bonds which unite them are so close that we cannot imagine life *without* matter, and it is equally difficult to conceive the assumption of vitality *by* matter; but we must never cease to look anxiously for the solution of the problem. The impossible is a horizon which recedes as we advance, and the *terra incognita* of to-day will to-morrow be boldly mapped upon every schoolboy's chart!—*Am. Journal of Science and Arts*, Nov. 1868.

### MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

8. *On Bloodletting as a Point of Scientific Practice.*—Dr. B. W. RICHARDSON, in concluding his able address just delivered before the Medical Society of London, summarized his views as follows:—

I would recall that bloodletting, as a point of scientific practice, is still open to us in some stages of typhus fever; in cases where there is a sudden tension of blood, of which sunstroke is an example; in cases of chronic congestion of brain; in cases of acute pain from serous membrane; in some classes of spasmodic pain; in cases of sudden arrest of circulation from concussion; in cases of congestion of the right heart; and, it may be, in extreme cases of hemorrhage. Above all, I claim for it a first place in treatment of simple uræmic coma.—*The Practitioner*, Nov. 1868.

9. *Influence of Chloride of Sodium and of Potassium on the Assimilation and Excretion of Iron by the Organism.*—Dr. N. WORONICHIN has made some researches on this point. It is well known, of course, that not only is iron taken up into the system with our ordinary daily food, but also that it overflows, so to speak, to a certain small extent in the urinary secretion, the feces, etc. Dr. Woronichin fed the dogs on which he experimented with a food which was entirely free from iron—namely, casein prepared free of fat, and distilled water. Comparative experiments were then made by adding soda and potash chlorides respectively to their food. The general results which came out are decided and interesting. Chloride of potassium does very notably increase the quantity of excreted iron; and it is obvious from the wasting of the animals, and from the specific gravity and the otherwise easily estimable characters of the urine, it is certain that this must be due to increased consumption of tissues. The total quantity of urine, moreover, is considerably increased under chloride of potassium. Chloride of sodium, on the other hand, does not produce by any means such a copious elimination of iron in the urine, but it appears to greatly assist the assimilation of iron. Zabelin had already showed that iron, when given internally, is not absorbed by itself simply, but that the process is affected by the agency of chloride of sodium. The very important result, therefore, flows from Woronichin's researches—that the administration of chloride of sodium simultaneously with iron enables a considerable proportion of the iron to be stored up in the organism; while a similar amount of chloride of potassium would have caused nearly all the iron exhibited to be discharged in the secretions.—*The Practitioner*, Dec. 1868, from *Wiener Medizinische Jahrbuch*, 1868, ii.

10. *On the Action of the Salts of Iron when introduced directly into the Blood.*—In the number of this Journal for January, 1848, will be found a *résumé* of a series of experiments made by Dr. JAMES BLAKE, now of San Francisco, Cal., with the view of ascertaining the effects produced on living animals by the introduction of inorganic compounds directly into the blood. From those experiments, which were very numerous, made with compounds of twenty-nine



of the elementary bodies, the result arrived at was, that these organic compounds when introduced directly into the blood, give rise to reactions connected with their isomorphous relations, or that isomorphous substances produce analogous reactions. This law was verified as regards all the more important isomorphous groups, including compounds: in the magnesian group, of iron, zinc, manganese, copper, cadmium, lime and magnesia; in the platinum group, of platinum, palladium, osmium and iridium; in the arsenic group, of arsenic, antimony and phosphorus; in the chlorine group, of chlorine, bromide and iodine; in the potassium group, of potassa, ammonia, soda and silver; in the baryta group, of baryta, strontia and lead; in the alumina group, of alumina, ferric oxide and glucina; in the sulphur group, of sulphur and selenium.

In the number of the *Journal of Anatomy and Physiology* for November, 1868, Dr. Blake related some experiments performed by him with the salts of iron. The fact that these metal forms oxides, the salts of which are widely different in their isomorphous relations, renders the investigation of its action in connection with the above law of considerable importance, and the part that this metal plays in the physiology of the blood, adds a still greater interest to any facts connected with its reactions.

"The quantity of the different salts required," he states, "to produce death is extremely different, for whilst 60 to 70 grs. of the protosalt can be circulated in the blood without producing any fatal symptoms, four or five grains of the persalt will destroy life."

"As regards the action of the salts of iron on the heart, the protosalts evidently tend to diminish its irritability, as the pulsations become slower and the pressure in the arteries diminishes. In larger doses the action of the heart is arrested. The persalts, on the other hand, appear not to exert any direct action on the heart; they certainly do not diminish the strength of its contractions, or it would not go on beating under the enormous pressure to which its internal surface must be submitted, when the arterial pressure is equal to 12 inches of mercury."

"The action of the protosalts on the nervous system shows itself in slower respiration, a peculiar state of quietness, in which the animal does not wish to move, although it has the power and is perfectly sensible, and by inducing vomiting. When introduced directly into the arteries, death is caused by its action on the nervous system. It is probable that the general effects produced by the persalts are owing to the important changes caused in the circulation. On first injecting it into the veins, the pulmonary circulation is arrested and venous congestion results: the supply of blood to the left side of the heart being cut off, the circulation of arterial blood through the body is almost suspended. When injected directly into the arteries the curious nervous phenomena that result are probably owing to the great pressure to which the nervous centres are submitted, and which appears to abolish entirely the functions of the encephalon, although respiration and heart pulsation are kept up for some minutes. As to the cause of the final cessation of the respiratory movements, I am inclined to think that it is owing to the effect of continued pressure producing some state of the nervous tissue which interferes with its reflexivity, and not owing to any chemical changes caused by the presence of the salt in the blood. In the more appreciable physical changes produced in the blood the two classes of salts are as different in their action as in every other respect. The protosalts give rise to changes in the blood which prevent its coagulation after death, whilst the salts of the peroxide do not at all interfere with its coagulation, but I believe render the clot firmer. Such are the more striking facts caused by the introduction of the ferrous and ferric salts directly into the blood. The difference in the physiological reactions produced by two classes of salts

<sup>1</sup> "The poisonous properties of the persalts of iron should lead to caution in their employment. I have seen deaths recorded after the use of these salts for the destruction of nævi in which I have no doubt the hæmadynamometer would have shown obstruction in the pulmonary circulation. In the *Berlin Allgemeine Med. Cent. Zeitung* for January 11th, 1868, a death is recorded in which the symptoms plainly indicate fatal pulmonary obstruction."

of the same metal is in itself a curious fact, but it becomes, I think, far more interesting when we find that these two classes of salts of the same metal, differing so strongly in their physiological action, yet have their strict physiological analogues in salts of other metals very different from iron. Thus the substances which, when introduced directly into the blood, produce effects analogous to the protosalts of iron, are the salts of magnesia, zinc, nickel, copper, and cadmium; whilst the salts that are analogous to the ferric salts in their physiological action are the salts of alumina and glucina. On the important bearing of these facts on the question of isomorphism and physiological reactions it is needless to enlarge. As regards the chemistry of respiration, the above experiments would show that the salts of the protoxide of iron, although so readily passing to a higher degree of oxidation when out of the body, are in some way preserved from the action of oxygen when mixed with the blood. Were not this the case a sufficient quantity of the persalt to prove fatal would soon be formed when fifty to seventy grains of the sulphate had been introduced into the blood. On the other hand, it would seem that the salts of the peroxide cannot be rapidly reduced whilst circulating with the blood, otherwise the effects of the small quantities used in some of my experiments would not have been so persistent."

11. *Action of Narceine*.—Dr. JOHN HARLEY, whose valuable investigations in regard to the action of several narcotics we have referred to in the previous Vol. of this Journal, has instituted experiments to determine the action of narceine. He very justly remarks that much confusion exists with regard to the properties of this substance, and quotes in proof of this the statements of Claude Bernard, Béhier, Debout, Eulenberg, Liné, Da Costa, Oettinger, etc.

The following are his own conclusions: 1st. That narceine is a pure *hypnotic*, but that its action is so very feeble that 5 grains or more are required to induce a slight tendency to sleep, when the medicine is given in powder or solution by the stomach; and that, when introduced by the skin, 1 grain is equivalent to only  $\frac{1}{8}$  of a grain of morphia at most. 2d. That it is impossible to reduce this quantity to the state of a non-irritating solution of such bulk that it may be introduced by one or two punctures, without risk of inducing subcutaneous inflammation. 3d. Granting that an efficient dose may be introduced beneath the skin without inconvenience, evidence is wanting that it possesses any advantage over morphia. 4th. That narceine is, therefore, practically useless as a medicine. 5th. Narceine kills by depressing and ultimately paralyzing the respiratory movements.—*The Practitioner*, Nov. 1868.

12. *Therapeutical Action of Veratrum Viride*.—M. OULMONT, in a memoir on this subject presented to the Academy of Medicine, states that he has employed the resinous extract made up into granules of one centigramme each, one of these being given every hour until vomiting takes place, this usually occurring after the third dose, although sometimes not until after the seventh or eighth. These short intervals are indicated by the fugitive character of the action of the medicine, and by the fact that this is not cumulative. Being aware of the elective action it exerts on febrile phenomena, M. Oulmont has administered the substance in cases of acute pneumonia, acute articular rheumatism, pleurisy, and typhoid fever. The following conclusions are drawn: 1. The veratrum acts directly by lowering the pulse and temperature, the former at the end of three or four hours diminishing by from twenty to fifty beats. The temperature lessens much more slowly, so that it is diminished by from a half degree to  $2^{\circ}$  C. only after three or four days. 2. The dose requisite to produce these effects is from 3 to 7 centigrammes per diem, and for durable effects to be produced, it must continue during three or four days. 3. It exerts a very favourable influence in simple pneumonia, the mean duration of which is reduced by its aid to  $6\frac{3}{4}$  days, while the mortality is less under this mode of treatment than under any other. Its action on the local condition is only indirect by arresting the progress of the disease and hastening on resolution. According to Dr. Kocter, of Berne, the mortality of pneumonia treated by veratrum is but 8.3 per cent., while it is 13.5 by the expectant treat-

ment, 20.4 by antiphlogistics, and 20.7 by antimony. In complicated pneumonia its action is much less decisive. 4. Its action is far less satisfactory in acute rheumatism and pleurisy, while in typhoid fever its employment is contraindicated. 5. Accidents sometimes attend its administration, collapse sometimes occurring when this has been inopportune or too strong doses have been given. Singultus also not unfrequently occurs.—*Med. Times and Gaz.*, Nov. 21, 1868.

13. *Papaverine*.—The physiological action of papaverine on man has been studied by Dr. LEIDESDORF (*Wochenblatt der Zeitschrift der k. k. Gesellschaft der Aertze in Wien*, 1868, No. 14). He examined the hydrochlorate and phosphate, but found the latter objectionable as it caused considerable inflammation when subcutaneously administered. Papaverine acts as a narcotic and soporific, and produces muscular relaxation. It reduces the frequency of the pulse without any unpleasant secondary action; and appears to relax the bowels slightly. Its effects are manifested in about three hours, and continue for from twenty-four to forty-eight hours. Continued use does not seem to induce tolerance. Leidesdorf recommends doses of from half a grain to one grain for internal use, and from three to five drops of a solution of six grains of hydrochlorate of papaverine to sixty drops of water, for subcutaneous injection.—*Journ. Anat. and Phys.*, Nov. 1868.

14. *Assimilation of Phosphate of Lime and its Therapeutical Employment*.—MM. DUSART and BLACHE, of Paris, have endeavoured to determine the question whether the phosphate of lime enters into the system by the transformations it undergoes in the stomach, or whether it is necessary, for the purpose of assimilation, that it should undergo a previous elaboration in a living organism. The experiments they have instituted appear to show that the solution of the phosphate in the juices of the stomach is influenced by the form which the phosphate assumes, for while the hydrated phosphate is rapidly dissolved, calcined bones and hartshorn are not sensibly dissolved; and specimens containing carbonate of lime are dissolved only imperfectly. Messrs. Dusart and Blache, therefore, propose, as the best preparation for assimilation, the hydrated phosphate which has already been subjected to the action of the gastric acids, and which they call *lacto-phosphate of lime*. This substance has an agreeably acidulous taste, and is readily digested. Experiments were made upon some of the lower animals, with a view of determining whether the repair of fractured bones was accelerated by the internal use of the phosphate, and it was found that such was really the result. Under the use of the *lacto-phosphate of lime*, Messrs. Dusart and Blache found that the increase in weight of the bones of the animals exceeded by more than 33 per cent. the weight of the animals subjected to ordinary treatment. The animals chosen for the experiment were guinea-pigs.—*Brit. and For. Med.-Chir. Rev.*, October, 1868, from *Bull. Gén. de Thérap.*, July 30, 1868.

15. *Physiological Action of Belladonna*.—Dr. MEURIOT has published a most important and elaborate research on the physiological action of belladonna (*Bulletin Génér. de Thérapeutique*, tome lxxv., 1868, pp. 5 and 49). We can allude to only a few of his conclusions. 1. The local application of sulphate of atropia to the frog's web produces contraction of the arteries, marked activity of the circulation, and then, if the quantity applied be large, a stasis in the veins, which frequently appears, afterwards, in the arteries also. Hence, the tissues are first pale, and subsequently congested. The same general effects are produced on the bloodvessels by internal administration. 2. Atropia invariably accelerates the heart's action; but if a poisonous dose be given, this acceleration is succeeded by slowing. 3. With a small dose, the arterial tension is increased and the cardiac contractions rendered more frequent; the former being due to contraction of the bloodvessels, and the latter to paralysis of the terminations of the vagi. 4. In small doses, atropia always increases the number of the respiratory movements, even after section of the vagi; and in large doses, it first increases and then diminishes or

paralyzes them. The effects are accounted for by the excitability of the medulla being increased by small doses, while the pulmonary branches of the vagi are paralyzed by the large ones. It follows from this that it is necessary to give large doses in order to influence the pulmonary branches of these nerves. Ignorance of these facts is, according to Meuriot, the reason why belladonna so often fails in asthma, when other drugs, in very small doses, have a beneficial effect. 5. Experiments on frogs show that atropia first destroys sensibility, and then destroys the excitability of motor nerves; but it does not abolish the irritability of muscles unless very large doses are given. In man, loss of sensibility has been found to occur in only very grave cases of poisoning. Still, in therapeutic doses it possesses the property of diminishing pain, but this effect is only a topical one. 6. Atropia invariably increases the reflex power of the cord—an assertion which is in opposition to the opinion of the majority of writers on this subject. 7. Belladonna cannot be regarded as a hypnotic, but it is, perhaps, a stupefying narcotic. Small or therapeutic doses cause agitation and sleeplessness, somewhat nervous doses cause various disturbances of the organs of sense, vertigo, hallucinations, uneasiness, general trembling, and, at times, a strange sense of fear, fantastic dreams, and gay delirium; and poisonous doses cause noisy delirium, interrupted by exacerbations of a furious character, and followed by trismus, loquacity, continual agitation, helplessness, and coma, often accompanied with convulsions and clonic contractions. The effects on the brain are due to disturbances of the circulation, and not to any elective action on the cerebrum. This opinion is supported by the observations of Schroff, who found that delirium occurred only when the frequency of the pulse was increased; and by the enormous congestion of the encephalic vessels, which is seen in animals killed with this poison. 8. The temperature is increased in man by some tenths of a degree, from 0.5 to 1.1. In the lower animals, small doses increase and large doses diminish the temperature; an increase of from 2 to 3 degrees and a diminution of from 4 to 5 having been sometimes observed. These effects on the temperature are supposed to result from changes in the circulation. 9. Atropia seems to diminish all the secretions with the exception, in certain circumstances, of the urine, which is, however, more properly an excretion. The modifications in the effects on the urine are due to differences in the circulation: small doses augment the blood pressure, and thus have a diuretic action; poisonous doses diminish the blood tension, and therefore either diminish or altogether prevent this excretion. Dr. Meuriot concludes this valuable paper by stating that belladonna should no longer be regarded as a narcotic or even as a narcotico-acid; that it has a special action on the bloodvessels and on the innervation of the heart, in virtue of which all its other physiological effects are produced; and that it should therefore be placed in the class of the *vasculo-cardiacs* of M. Sée.—*Journ. Anat. and Phys.*, Nov. 1868.

16. *Action of Belladonna.*—According to Dr. D. DE SAVIGNAC, although belladonna is a stupefying agent when it acts fatally, it is also an excitant; and this latter property, he thinks, constitutes the fundamental character of its mode of operation. Its excitant properties are directed especially to the great sympathetic nerve, as is proved by the therapeutical applications of belladonna. The drug excites the contractility of the muscular fibres of the intestine, and thus promotes the alvine discharges. It acts besides on the biliary tubes and on the common bile-duct, rendering the stools bilious, and hence its beneficial influence in cases of hepatic colic due to the presence of biliary calculi. Its action on the sphincters appears to be of a nature to place their powers in harmony and equilibrium, for as these structures both dilate and contract, it is necessary that neither function should preponderate over the other. Thus belladonna in small doses excites the motive power both of the hollow viscera and of their sphincters, acting both on the dilators and contractors, and giving to the viscera the power of moving onwards the excrementitious matters until they are out of the system. Thus retention of urine may be due to paralysis or to spasm of the neck of the bladder; in the first case, belladonna excites the expulsive contractions, and in the second it removes the spasm. Dr. de Savignac also alludes to the advantages obtained from the local use of blisters spread

with belladonna ointment in rheumatic pericarditis and endocarditis, and in organic diseases of the heart; and he attributes this effect to the use of belladonna in checking the disorder, the irregularity, and the morbid energy of the beats of the heart, and in restoring their normal rhythm. This property, which is analogous to that possessed by digitalis, may probably be referred to an exciting action of the vagus nerve, after what has been taught by M. Germain Sée on the functions of this nerve as a regulator of the movements of the heart. In its action as an external application, belladonna is at once a sedative and resolvent; and thus, when applied in the form of ointment to joints affected with rheumatism, it relieves the pain and dissipates the swelling, and its resolvent powers are further proved by its efficacy in the treatment of glandular swellings; and oculists daily make use of it for the purpose of promoting, after the operation for cataract, the absorption of the fragments of the capsule of the crystalline lens, or of the products of consecutive iritis. Where there is resolution there is necessarily excitation, both nervous and vascular, of the parts affected. Dr. de Savignac then refers to the employment of belladonna in cases of asthma, which is caused by spasm or paralysis of the muscular fibres of the bronchial tubes, most probably the latter; but in whichever way the phenomena of asthma are explained, the action of belladonna is intelligible, for it will act as a sedative in case of spasm, and as an excitant in case of paralysis. But although Dr. de Savignac has proved that, in many cases, the therapeutical action of belladonna depends upon a common excitation of the dilating and constricting muscles, he does not wish to deny that its excitatory properties have an elective tendency to act upon the dilators, as is well seen in the case of the iris, the dilators of which are excited by the smallest doses of belladonna or atropia. The anæsthetic and sedative powers of belladonna, although well known, are not easily explained upon physiological principles; and all that is certain is, that the drug, like opium, relieves pain, but the *modus operandi* is still to be sought for.—*Brit. and For. Med.-Chir. Rev.*, Oct. 1868, from *Bull. Gén. de Thérap.*, Nov. 30, 1867.

17. *On the Employment of Belladonna in Surgical Affections.*—MR. CHRISTOPHER HEATH states that the action of belladonna, whether applied locally or given internally, is the same; viz., that by its action upon the vaso-motor system of nerves it diminishes the calibre of the capillaries, and thus directly reduces the vascularity of an inflamed part. Its action is thus peripheral; and it is, therefore, the opposite of aconite, whose action is central or upon the heart itself. It does not follow, however, that the two drugs cannot be employed together; quite the contrary: the action of the one is to diminish the flow of blood to the part, whilst the other assists the tissue to get rid of the superfluity it already contains and resist its further entrance, and the two may in many morbid conditions be advantageously combined.—*The Practitioner*, Nov. 1868.

18. *Influence of Digitalis on the Pulse.*—DR. CONSTANTIN PAUL has published (*Bulletin Génér. de Thérapeutique*, tome lxxiv., 1868) a research on the influence of digitalis on the pulse, in which his principal results were obtained by the use of the sphygmograph. He thus states his conclusions: Digitalis, in small doses, generally diminishes the frequency of the pulse; in large doses it increases it. When digitalis is exhibited in such doses as to produce its hyposthenic effects, it lowers the arterial tension; and the contrary effect may possibly be produced by very small doses, as some investigators have asserted. Finally, it is probable that digitalis raises the arterial tension when it diminishes the frequency of the pulse, and that it lowers this tension when it increases the number of the pulsations.—*Journ. Anat. and Phys.*, Nov. 1868.

19. *Syrup of Codeia in Whooping-cough, etc.*—The *Journal für Kinderkrankheiten* (7. 8. Hft., 1868) mentions that melon syrup, containing codeia, is at present used as a specific against whooping-cough in Italy. It is also employed in other convulsive coughs of children, especially those which are the

sequelæ of acute inflammations: also in the nervous hacking cough of pregnancy in nervous and sensitive women.—*The Practitioner*, Dec. 1868.

20. *Quinia as an Antiphlogistic*.—A. MARTIN, in an Inaugural Dissertation, published at Giessen, in 1868, states that he has tested the conclusions drawn from their experiments, in reference to the action of quinia upon the blood (see *Cbl.*, 1867, and also 1868, p. 172), by Binz and Scharrenbroich. Twelve experiments were performed by him. In two of these, repeated with every care and precaution on dogs, it was clearly shown that when the system was put under the influence of quinia, the formation or augmentation of the white corpuscles of the blood as well as the effort for their expulsion by the intervention of an inflammatory process was restrained. The experiments presented by the author to prove the curative influence of quinia upon inflammation seated in the parenchymatous viscera are new. He adduces to this intent experiments made upon frogs by laying bare the liver, in which condition with great care the animals may be kept alive for three days. The proper hepatic corpuscles in the frog, it is true, resemble very closely the white corpuscles of the blood, but from these they may be distinguished by their size and composition. It was shown by these experiments that the action of the quinia caused the inflammatory process to become as fully arrested in the liver as in the exposed mesentery (*Cohnheim, Cbl.*, 1867, p. 809). To test the antiphlogistic power of quinia, in four frogs the liver during fourteen days was allowed to remain exposed for twelve hours each day. Into two of these frogs, during the intervals of exposure, .0025 grm. of quinia was injected. In the twenty preparations which accompanied the thesis of Mr. Martin, he thinks also the fact of the antiphlogistic action of quinia was fully established. It is very certain that the development of white corpuscles in the blood is far less than occurs in other cases of inflammation treated without quinia.—*Centralblatt f. d. Medicinisch. Wissenschaften*, Oct. 1868. D. F. C.

21. *On the Salts of Quinoidine; their Therapeutic Value, &c.*—BERNATZIK (*Wien Med. Wochenschr.*) says that, in respect to the physiological results of the action of the alkaloids of cinchona, he could detect no difference from those obtained from the action of cinchona itself. He endeavoured by an examination of the experience of the physicians of Vienna to determine the pharmacæutic value of the pure quinoidine salts in paroxysmal fevers. In thirteen cases it was found that a single dose of twelve grains of the muriate, acetate, or citrate of quinoidine, either moderated or completely arrested the disease: in a fourteenth case the article was not tolerated. On the other hand, Dr. Löbl found that the muriate of quinoidine did not possess much more than one-third the efficacy of the sulphate of quinia. The passage of quinoidine into the urine was observed in two cases. The subcutaneous injection of quinoidine has been attended by no favourable results. It is true that thus employed it exerts a powerful influence upon the fever; it has been found, however, to excite at the place of injection a severe inflammation, terminating even in gangrene.

Trial was made by Professors Duchek and Braun of the curative influence of the carbolate of quinia in puerperal and in typhus fever, and it was found to exert a beneficial influence over most of the symptoms of these diseases. As the remedy when given in form of pills is liable sometimes to pass without change through the stomach and intestines, Dr. B. gives it in the form of wafers, soaked in an alcoholic solution of the carbolate of quinia and then strown over with starch. Given in this manner, however, vomiting is liable to be produced, in consequence probably of a portion of the carbohc acid being set free in the stomach. The presence of both quinia and carbohc acid was detected in the urine.—*Centralblatt f. d. Medicinisch. Wissenschaften*, May, 1868. D. F. C.

22. *Therapeutic Uses of Thymic Acid*.—Writing in the *Union Pharmaceutique*, M. le Dr. PAQUET states that this acid, which is allied to carbohc acid, is a remedy of immense value to the surgeon. He describes its effects on healthy and morbid tissues, and draws the following definitive conclusions as to its uses: (1) Thymic acid deserves to hold a high place among the antiseptic

preparations used in treating wounds; (2) in its concentrated form it is an excellent substitute for nitric acid and nitrate of silver; it is especially superior to phenic acid, because it has not got its extremely disagreeable odor; (3) in aqueous solution (1 in 1000), to which a few grammes (a gramme is equal to 15.4 grains) of alcohol have been added, it is extremely useful in furthering the cicatrization of wounds. It is especially serviceable in those cases in which tincture of iodine is generally employed.—*The Practitioner*, Nov. 1868.

23. *Employment of Glycerine of Tannin*.—Dr. SIDNEY RINGER, in an interesting paper (*The Practitioner*, July, 1868), says that this preparation of tannin appears to be but little known, while in his opinion it is very serviceable in many diseases. In this country it is perhaps even less known. We do not find it mentioned in the U. S. Dispensatory; but on reference to a very recent English work (*Dictionary of Mat. Med. and Ther.*, by Adolph Wahlteuch, M. D.), we find the following formula for its preparation: R.—Gallic acid, ʒj; Glycerine, fʒiv. Rub and heat. Dr. R. thinks this preparation of great use in ozena; in the thin sanious or thicker purulent discharge from the nostrils which sometimes occurs after measles, scarlatina, and other diseases; in the obstruction of the nose frequent in syphilitic children. The thin, sanious or purulent discharge from the ears, so commonly met with in unhealthy children, can, he says, be stopped at once by filling up the external meatus with this preparation. If there be acute inflammation of the meatus, this should be relieved before using the tannin.

In many cases of *eczema* he says this preparation is of very great use. "It is of service only in the earlier stages of the disease. Thus, when the skin is inflamed, red, swollen, and weeping, if the scabs be thoroughly removed, and the raw surface be painted over with this preparation of tannin, the discharge is stayed, the redness, heat, and swelling much lessened or removed, and the appearance of the parts much improved. When in a less active condition, and when the tissues are less red, swollen, and weeping, the *eczema* may more profitably be treated in the same way. The tissues assume a much healthier appearance, and after a few applications look like a healthy, healing sore. A poultice may be usefully applied at night, and this glycerine of tannin twice or three times in the day. All the advantages which accrue from its employment in this disease have not yet been mentioned, for the troublesome itching, and tingling, and burning, so common in *eczema*, are at once removed by this application, and thus the tearing with the nails and rubbing with the hands which prevents the healing of the sore, and causes it even to spread, is prevented, and the comfort and well-doing of the patient much promoted, as the itching and feeling of burning often greatly breaks the sleep. Sometimes the glycerine of tannin does not, of itself, quite remove the disease, but brings it to the stage where there is only a little desquamation, with a tendency to crack and ooze. It may be necessary in such case to perfect the cure by a resort to tar or carbolic acid ointment. It need not be said that some cases prove incurable by this as by all other treatment. Impetigo may be beneficially treated in the same way. The scabs should be removed by a poultice applied each night, while this tannin preparation is employed during the day. In the treatment of these diseases of the skin by this application, the state of the digestive organs must not be overlooked, but anything wrong with them should, if possible, be removed.

"The *eczema* which occurs behind the ears of children, and is often limited to these places, is most admirably treated with the remedy. It almost always dries up and heals after one or two applications, even when it has lasted for weeks or for months. The gums, if red and swollen, should be lanced, or other irritations removed. Intertrigo of children may also be treated in this way."

He thinks it an extremely useful application to the throat in chronic inflammation and in superficial ulceration of the pharyngeal mucous membrane, and when this membrane is relaxed, moist, and granular looking, etc.

24. *New Method of Applying Remedies to the Pharynx and Larynx by Means of Irrigation*.—Prof. MERKEL, of Leipzig, read a paper on this subject before  
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the recent annual congress of naturalists and physicians. This method was practised in the following manner: The patient took half a teaspoonful of the liquid to be used, the head being retroflexed and the mouth wide open; let it flow down the tongue, and then made some lateral movements with the head, in order to bring the liquid into contact with all the parts upon which it was intended to act. The Professor showed, by an auto-laryngoscopic demonstration, that, by operating in this manner, the liquid would touch the base of the tongue, the sinus glosso-epiglotticus, the anterior portion of the epiglottis, the hyo-epiglottic ligament, the pyriform sinuses, the posterior surface of the arytenoid cartilages, and the posterior wall of the glottis cartilaginea. The method was useful in all congestive and inflammatory conditions of the mucous membranes of the pharynx connected with difficulty of swallowing, retching, sickness, etc., also in erosions, ulcers, and other lesions of the same parts, in infiltration, tumours, and paralysis of the muscles on the posterior part of the arytenoid cartilage. Tannin was the remedy chiefly used by the Professor, but he also sometimes employed nitrate of silver, iron, iodine, morphia, nux vomica, Calabar bean, etc.—*Med. Times and Gaz.*, Nov. 28, 1868.

25. *Portable Mustard Plasters*.—M. LEBAIGNE (*Journal de Pharmacie*) has proposed to make portable mustard plasters in the following manner: He covers one piece of paper with a concentrated solution of myronate of potash, and a second with a concentrated solution of myrosine. When the two papers are moistened and put together the essence of mustard is developed. The solution of myronate of potash is obtained by throwing into boiling water the farina of black mustard. The filtered solution contains the myronate of potash, as the boiling water has destroyed the action of the myrosine. The myrosine is obtained by action upon white mustard by water at 40° C. The filtered solution will contain nothing but the myrosine, as white mustard does not contain myronate of potash.—*Med. Press and Circular*, Nov. 1868.

## MEDICAL PATHOLOGY, SPECIAL THERAPEUTICS, AND PRACTICE OF MEDICINE.

26. *New Investigations relative to the Pathology of Cerebral Hemorrhage*.—MM. CHARCOT and BOUTCHARD have published (*Archives de Physiologie Normale et Pathologique*, Nos. 1, 5, and 6, 1868) a very interesting memoir on this subject.

Of 84 cases of cerebral hemorrhage which they have collected, in every one miliary aneurisms existed.

Other anatomical conditions which have been supposed to exert an influence in the production of cerebral hemorrhage were met with, but less frequently.

Thus, atheroma of the arteries of the brain, to which has been ascribed a preponderating influence, is shown by MM. C. and B.'s statistics not to hold the first place. The state of the arteries at the base of the brain was noticed in 69 cases. Of this number the arteries were not atheromatous 15 times, or in more than a fifth of the cases; they were very slightly or scarcely at all atheromatous in 25 cases, or in more than a third of the cases; they were recorded as simply atheromatous in 12 cases; finally, they were very atheromatous in 17 cases, or in scarcely one-fourth of the cases. We may be permitted, then, to assert that subjects who die of cerebral hemorrhage have the arteries of the brain non-atheromatous in less than a fourth of the cases, or nearly 22 per cent., and that these latter present different degrees of atheroma in scarcely three-fourths of the cases. This frequency of the apparent integrity of the arteries of the brain in subjects who present old or recent spots of sanguineous effusion does not accord with admitted opinions, and this result differs very considerably from the figures obtained in former statistics. M. Durand Fardel,



who collected 32 cases of cerebral hemorrhage, in which the state of the arteries at the base of the brain was noted, found them intact in 12 per cent. In a former statistics, based upon 39 cases, the most of which have not been introduced into this paper, because most frequently aneurisms were not sought for, the arteries appeared healthy in 18 per cent. The proportion of cases in which atheroma is wanting in the arteries of the brain of subjects who have been affected with cerebral hemorrhage is almost the same as that of cases in which the arteries remained healthy in old persons whose brains are not affected. In persons more than 60 years of age, the arteries would be free from atheroma in 28 per cent., according to the statistics of M. Durand Fardel. In persons who die from sanguineous apoplexy, atheroma of the arteries of the brain was absent in 22 per cent. The difference, it will be seen, is so insignificant that arterial incrustations have but a very moderate influence in the production of extravasation.

Hypertrophy of the heart, which is supposed to exercise a considerable influence in cerebral hemorrhage by Legallois, Corvisart, Brichteau, Boulland, Menière, Rokitsansky, Leubuscher, etc., and atrophy of the kidneys, which by others has been enumerated as one of the causes of cerebral hemorrhage, are shown by MM. C. and B.'s statistics to exert but little influence in its production.

Of all the organic conditions, say MM. C. and B., capable of exerting an influence in the pathology of cerebral hemorrhage, one only, in consequence of its constant pressure, appears deserving of being considered as the true cause of sanguineous extravasation, and that is the existence of miliary aneurism.

This conclusion to which they have been led directly, by the observation of numerous facts, appears to be indirectly deducible by criticism of the insufficient hypothesis previously advanced to explain the mechanism of cerebral hemorrhage.

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27. *Range of Temperature in Typhus and Enteric Fever.*—Dr. J. W. MILLER (*Brit. and For. Med.-Chir. Rev.*, Oct. 1868) from a study of many observations made in a number of cases of typhus and enteric fevers, deduces the following conclusions.

In typhus fever the most common temperature is from  $103.1^{\circ}$  to  $104^{\circ}$ . A higher temperature than  $105^{\circ}$  seems to be rare. In studying the range of temperature in typhus fever (and in other diseases likewise) one of the first points to arrest attention is that neither in its rise towards the acme of the fever nor in its subsequent fall is it regularly progressive. It rises one day, falls a little the next, rises again to a point higher than it had previously attained, and so on, until the defervescence has commenced, when it descends in a similarly interrupted manner until it has reached or fallen below the normal standard. The same description applies to the acceleration and diminution of the frequency of the pulse before and after the turn of the fever. In typhus, as a general rule, the temperature rises very rapidly during the first two or three days of the case to a point which it rarely much exceeds, and the defervescence in the cases observed was gradual. A sudden defervescence occupying from 24 to 36 hours and fully deserving to be denominated a crisis, has been quite an exception.

The evening temperature in typhus is most commonly higher than that of the morning, but to this there are numerous exceptions. The difference between the morning and evening temperature, during the height of the fever, or from about the third to the tenth or eleventh day, is comparatively seldom above one degree, and although about the period of defervescence the difference is sometimes much greater, the oscillation is not continued over more than one or two days.

Very generally there is a remission of the temperature during the second half of the first, or first half of the second week, this abatement continuing sometimes one day, sometimes several days, after which the temperature again rises before the defervescence begins. A high temperature is, as a rule, accompanied by a frequent pulse, but the day of maximum temperature does not seem at all to correspond with the day of most frequent pulse, being generally earlier in the case.

The duration of elevated temperature is very rarely beyond 18 days; it is generally shorter by several days, and may be even as short as 9 days.

After the commencement of convalescence the temperature generally falls for a few days below normal, being frequently 97° and sometimes even lower.

An elevation of temperature about or after the commencement of convalescence, is said to be frequently the first indication of the occurrence of some internal local inflammation.

In enteric fever the duration of elevated temperature is very rarely much less than 21 days; it is generally longer, and may be protracted to 35 days or even more. The evening temperature is almost constantly higher than that of the morning. The difference between the morning and evening temperature is generally, throughout the case, greater than in typhus, and towards the end of the fever there occurs the very characteristic oscillation of temperature, during which the difference is frequently five, six, or even seven degrees, and which may continue from a few days to a week or more.

A high temperature in enteric fever is frequently accompanied by a pulse but slightly accelerated, and occasionally by a pulse slower than normal.

28. *Epilepsy*.—Dr. GEORGE JOHNSON (*Brit. Med. Journ.*, March 21, 1868), considers that both the loss of consciousness and the convulsions of epilepsy are the result of sudden and extreme anæmia of the brain. This anæmia, when not caused by hemorrhage or by a mechanical impediment to the circulation outside the cranium, is due to an extreme contraction of the minute cerebral arteries. Anæmia of the brain to cause convulsions, must be sudden and extreme. In cases of syncope the circulation gradually fails, and there may be complete loss of consciousness without convulsions. Syncope, in proportion to its suddenness, approaches in its character to epilepsy, and there are certain cases of fainting, with semi-convulsive shudderings, which show that the boundary between epilepsy and syncope is sometimes ill-defined and difficult to trace. As regards the treatment, there are two remedies which Dr. J. considers particularly worthy of notice: namely, chloroform and bromide of potassium. Chloroform inhalation has a remarkable power of arresting epileptic convulsions. Its action in warding off a threatened fit, and in cutting short a violent and prolonged paroxysm, is uniform and certain. It is probable that anæsthetic vapours prevent or stop convulsions by lessening the reflex excitability of the nervous system, so that convulsions do not occur in etherized rabbits, even though the brain be rendered extremely anæmic by hemorrhage or by arterial obstruction. Recent experience has amply proved that the bromide of potassium, in full and frequent doses and sufficiently long continued, is of great value in the treatment of epilepsy. Its action in preventing convulsions is analogous to that of chloroform, differing in being less powerful and rapid in its operation, yet by frequent repetition its influence may be rendered more durable and more permanently beneficial.

29. *Summary of Direct Symptoms, Differential and Absolute, of Separation of Fibrin from the Blood within the Circulation*.—Dr. B. W. RICHARDSON, in his interesting lectures on Experimental and Practical Medicine, now in course of publication, lays down the following means for the diagnosis of the separation of fibrin from the blood.

"I cannot express the leading symptoms of separation of fibrin in the heart better than by putting them into one short passage. *They are the symptoms of hemorrhage without the visible loss of blood.* They are—falling temperature, pallid or livid surface; feeble, irregular, or fluttering pulse; muscular prostration, and gasping respiration.

"With these facts in the mind, the diagnosis becomes simple; still it must be approached with care. I usually proceed by the exclusion of other causes that might possibly also lead to symptoms of hemorrhage without visible loss of blood.

"I ascertain, first, if it be possible to exclude the idea that the collapse is from primary nervous lesion. This is pretty safe. In cases of obstruction from separation of fibrin, there is, as a rule, none of the evidence of special

nervous injury. The mind is clear, often painfully clear, nearly to the last; there is no sudden coma, there is no stertor, there is no primary loss of sensibility, there is no special paralysis of muscle—there is exhaustion, debility of muscle, but not paralysis. Next, I ask if direct loss of blood can be excluded. In cases of obstruction from separation of fibrin this point is always easily determined, except in such rare instances as the rupture, by a small opening, of an aneurism into the pericardium. Failing the process of exclusion, I try and learn if excessive exudation or excretion of fluid from the body can be excluded, such as choleraic flux. There is no difficulty in the ordinary run of cases in arriving at a correct conclusion on this point.

“There is one form of exudation which might lead to error of diagnosis. I refer to effusion of fluid within the pericardial cavity. The phenomena of sudden death from this cause are indeed very close to those of obstruction within the heart. I remember the late Dr. Golding Bird describing a case of this kind, at the Medical Society of London, which struck me at the time as singularly instructive. Such a case might perplex the most careful inquirer, but its extreme rarity places it almost out of the range of practice.

“Lastly—still carrying out the process of exclusion—I put it whether any obstruction in the respiration is the primary cause of the symptoms. On this head the diagnosis is usually very clear. There is always dyspnoea when there is separation of the fibrin in the heart, but the dyspnoea is peculiar in that it occurs—except in cases complicated with independent disease of the lung—with open air-passages. Examining the lung, we find that there is plenty of free space for breathing, and that the difficulty lies not in air gaining access to blood, but in blood gaining access to air. In young children, in whom the chest is expandible, there is often a confirmatory sign which stamps the fact of concretion on the *right* side: the chest is raised, and there is the resonance due to emphysema. This arises from the destruction of balance between the column of air passing into the lungs and the column of blood passing through the pulmonary artery; the column of air presses with its usual force, the column of blood is reduced, and the air permeates the lung tissue.

“The idea of the symptoms as dependent on nervous lesion, hemorrhage, flux, exudation, accumulation of fluid in the pericardium, or obstruction of respiration, being then excluded, I proceed next to the direct physical evidences of separation of fibrin. The first of these is a peculiar dyspnoea. I allude now specially to cases in which the obstruction is on the right side. The dyspnoea is most distressing; it admits of no relief. If you ask where is the oppression, the finger is invariably pointed to the heart; if the patient can speak and explain his symptoms, he will describe that he has no difficulty in drawing in breath—that he has no pain, in the ordinary sense of the term, but yet he feels that he is sinking from inability to breathe. This dyspnoea lasts to the end, and there is often intense working of the alae of the nose. The explanation of the dyspnoea is that the blood has been cut off from the air, so that, whatever efforts are made to breathe, there is no efficient result. I have already said that in the young obvious signs of emphysema attend the condition.

“There is dyspnoea, again, when the obstruction caused by fibrin is on the left side; but, though severe in character, it is not of the same type as is described above. It is congestive rather in nature, and is referred by the sufferer to the chest generally, not specially to the heart.

“From the dyspnoea I turn next to the heart itself. I was at one time of opinion that few, if any, special physical signs of separation of fibrin exist as reliable signs. A larger experience has, to a considerable extent, modified and corrected that opinion, and indeed, during the last five years, I have detected not only fibrin within the heart, but the actual position of the mass in regard to the cavities, with extreme precision. The points I keep in mind are as follows: If, with all the conditions likely to lead to separation, I find the action of the heart feeble and irregular, I make a careful examination with the stethoscope for the two sounds of the heart on the right and on the left sides of the organ. Whatever theory we may adopt as to the cause of the heart's sounds, one thing is certain—that, in health, the tricuspid and mitral valves act together, that the pulmonary and aortic valves act together, and that the

first and second sounds respectively are coincident with the simultaneous action of those valves which move together at the same time. When, therefore, in any given case, the action of the valves on one side of the heart is impeded—when, for example, a mass of separated fibrin interferes with the valvular movements—then the sounds produced by the valves on the impeded side will be reduced or even lost altogether. It is possible to detect this. In a case I saw with Mr. Spencer Wells, where fibrin was being laid down on the right side of the heart, this line of diagnosis was so easy that he expressed to me it had only to be practised once to be recognized ever afterwards. Suppose, then, that the separation is on the right side of the heart, there will be feeble or deficient first and second sounds over the line of the right side of the organ—that is to say, in the line of the heart by the sternum. Turning, however, to the left side, both sounds of the heart will be heard.

“Supposing the separation of fibrin to be on the left side, these physical signs will be simply reversed—that is to say, the sounds of the organ will be faint or inaudible on the left, audible and distinct on the right side.

“One other distinctive point is worthy of attention. When the heart is blocked up with fibrin on the right side, its impulse is reduced, and its action is feeble throughout. When, on the other hand, the organ is blocked up on the left side, the action as a rule is for a long time irregular, tumultuous, struggling.

“In some rare cases there is separation of fibrin on both sides of the heart, in which the prominent symptoms are those of obstruction in the right cavities.

“In concluding this history of symptoms, it is necessary briefly to refer to the condition of the other organs of the body when there is separation of fibrin in the heart. I may state on this point as a general truth, that when there is an obstruction on the right side of the heart from fibrin, there is necessarily congestion of all the organs of the body except the lungs, and that when the separation is on the left side of the heart the congestion extends to the lungs also.

“In three cases where the separation of the fibrin was on the right side, and the symptoms were prolonged over many days, I have seen congestion of the veins in the lower half of the body succeeded by exudation of watery fluid, so that the limbs became cedematous.

“The diagnosis of separation of fibrin in arteries and veins is in some cases as remarkably clear as it is in other cases profoundly obscure. When from the left side of the heart a portion of fibrin floats away into the arterial system, plugs up a main trunk and acts like a ligature on an artery, the diagnosis is easy enough; or when in a superficial vein small portions of mass can be detected directly, as in one of the cases I have related, then again the diagnosis is sufficiently simple; but when a tube or solid cylinder of fibrin is laid down in an artery or vein and produces obstruction at the point where it is so laid down, then, although the fact of obstruction may be clear enough, and the position of the obstruction clear enough, the nature of the obstructing substance, and whether it be or be not fibrin, must in many cases be out of our calculation. Nothing assists us here except the previous history. Should it be discovered that the patient has recently suffered from acute disease marked by tendency to separation of fibrin, or that he has been exposed to exhaustion, or shown indications of local stasis of blood, then we may draw an inference as to the possibility of separation of fibrin. There, I fear, we must rest content, hoping that, having discovered so much, we may in course of time discover more.”—*Med. Times and Gaz.*, Nov. 21, 1868.

30. *Pathology and Treatment of Cholera*.—GEO. BARNARD, Esq., Surgeon 6th B. L. I., has favoured us with a copy of a letter addressed by him to the Inspector-General of Hospitals, Bengal Army, in which he maintains that cholera is a specific acute inflammation of the mucous tissue of the stomach and small intestines, and that antimony, or its ally, ipecacuanha, are both remedies, *par excellence*. We lay his remarks before our readers, but at the same time must say, that tartarized antimony seems to us to be a most inappropriate remedy for cholera. We cannot, indeed, conceive a single indication it can fulfil, or on

what principle it can be recommended except that of "*similia similibus, &c.*," for it is a severe irritant to the mucous membrane, and artificial cholera may be produced by its administration, as Mr. B. himself admits.

He writes, under date of July 31st, 1868: "In the commencement of the present year I obtained leave of absence for three months to visit Calcutta, for the special purpose of searching all the old records of cholera to be found, to discover, if possible, amongst them some hint or clue to a rational, and, at the same time, simple and easy treatment of this fatal malady. And, firstly, as a result of this search; secondly, from Dr. Lionel Beale's researches into the morbid anatomy; and, thirdly, from an expressed opinion, which coincided with my own, of Dr. Ewart's, of Calcutta, as to the nature of the disease, I have the honour to give, for the information of the Inspector-General of Hospitals, Bengal Army, the following reasons to show that antimony is the remedy for cholera, as it is for many other acute inflammations. First, then, as to the nature of the disease—cholera. It is supposed to be derived from, or to be the effect of, an animal or vegetable poison in the body; but this is theory not fully proven. Dynamic sources have been talked of, but we really know nothing more than this—that dirt, dirty air, dirty water, dirty food, dirty person, dirty clothes, and overcrowding, afford the greatest facilities for the spread of the disease when it once arises; more than this we do not really know at present, I believe. We assume that it is communicable from man to man, or from community to community, from one seaport to another, from one country to another, by means of human intercourse, as it almost always follows the high roads of human intercourse; and we are right to assume as much as this, and act on the assumption, for the safety of communities, until it is proved incommunicable through such means, always and everywhere, under every possible condition. All we actually know of its natural history is the developed form in man, its symptoms, and its effects—positively nothing more. It produces, or in its essence it is, an inflammation—specific or non-specific no matter—of the mucous membrane of the stomach and small intestines. This inflammation of this tissue attracts an enormous flow of blood to the part affected, an hyperæmia, for it is intensely acute; the most rapid tissue changes it is possible to imagine take place in the most rapid manner, requiring an enormous supply of blood, and the products are thrown out of the body by vomiting and purging as rapidly as they are formed. This inflammation causes a burning pain in the stomach, from the ensiform cartilage to the umbilicus; and, as the tissue inflamed attracts so much blood, and robs it of so much of its watery portion, the extremities get cold and shrivelled and cramped; the eyes sink in their sockets; even the tongue and breath are cold; all vital phenomena are changed; all other secretions cease; everything gives way to the intensity of this inflamed action of the mucous membrane of the stomach and small intestines, for all the blood in the body is required to carry it on. Cholera has been mistaken for irritant poisoning, and irritant poisoning for cholera, and for nothing else only for irritant poisoning, which inflames the same tissue, and the symptoms of some irritant poison, whose effect is to inflame the mucous membrane of the stomach and bowels, so closely resemble the symptoms of cholera, that the greatest skill and care are sometimes required to distinguish between criminal poisoning and cholera. Dr. Lionel Beale's researches into the morbid anatomy of this disease clearly prove the intensity of the inflammation of the mucous tissue. Many and different conditions of this tissue have been described by observers, depending on the stage at which death occurred, but unmistakable signs of inflammation are over and over again recorded. Dr. Ewart, Physician to the Calcutta Medical College Hospital, is of opinion that the disease is essentially, or results in, an inflammation of this tissue, and I and others share this opinion with him.

"Granting that cholera is an inflammation, so far as we are practically concerned, of the mucous membrane lining these viscera, and that there is a great need of a remedy which shall act speedily and efficaciously upon the inflamed tissue, what one so likely to suit our purpose as antimony? What is the remedy always relied upon, and most justly so, for other acute inflammations, especially

of mucous membranes, in which calomel is not considered so fit or rapid enough in its action. Antimony.

"It maintains a relaxed state of the arterial system, and inflamed parts can thus be continuously kept with all the advantages of lessened vascular tension. It is the most rapid remedy we have in its action; it does not produce vomiting after the first dose or two; it will allay vomiting in cholera after the first two or three doses, for in that time its effect upon the inflamed mucous membrane of the stomach will be to check the inflamed action and its flow of products (like rice-water). Its best and most marked action, perhaps, is on the skin, drawing the circulation of the blood to the surface—a most desirable result, and specially desired to restore the balance of the circulation in cholera. It is a powerful diuretic also—another desideratum for its use in cholera. There is no fear of its increasing the vomiting and purging in the true cholera stage, for they are results of inflammation, and its effects upon the inflamed tissues will be to stop that excessive action, and outpour of inflammatory products—'rice-water evacuations.' The excretion of these fluids being arrested by the action of the antimony, there is nothing left to be purged out or vomited.

"Calomel is a valuable remedy no doubt, but antimony is of much greater value, because it is so quick in its action; in some cases life is extinct in less than six hours; calomel can have no effect in these; antimony produces an effect within half an hour, as a rule. In my search through the old cholera records in Calcutta, I found six cases of cholera treated by one grain doses of tartarized antimony every quarter of an hour; in five of these cases the vomiting ceased after the third dose, and the patient recovered; one died, and died, in the opinion of the medical officer, because the antimony was not continued long enough, or there was a relapse, and the antimony was not repeated. These cases occurred in the midst of a severe epidemic in Bengal, in 1824 or 1825, when nearly all the cases treated with calomel were lost.

"I met with one case of cholera last month. I found a Syce lying on the floor of his master's stable at 4 P. M., vomiting and purging incessantly a thin, watery, colourless fluid, cold extremities, cramps, minute pulse, &c. He had one grain of tartarized antimony given him every quarter of an hour three times; he vomited after the first and after the second dose, but not after the third. Thus, in half an hour the vomiting was completely checked. About three hours after this he was taken to hospital in a very great state of prostration, but *perspiring* freely, and no purging. He had ammonia and brandy and water given him at intervals, and he gradually recovered. He passed urine at 5 P. M. on the next day, for the first time for six and thirty hours. He had no other medicine, and was discharged well on the third day. Antimony should not be given in the preliminary stage of diarrhœa, if there is such a stage; I do not propose it as a remedy for diarrhœa. We have one—a sufficient and thoroughly good and reliant one—opium.

"30 grains of 'antimony's ally,' ipecacuanha, will have the same effect given in the same way every quarter of an hour. See Docker's case of forty grains ipecac in advanced collapse (*Lancet*), and 392 cases, by Dr. Carl Müller, Vienna.

"When cholera is epidemic, opium should be given for diarrhœa, as inculcated by Dr. John Macpherson, freely, in large and sufficient doses, either in combination with aromatic chalk, chloroform, sulphuric acid, ether, or brandy; one or the other, or even alone; but it should always be given freely; for, as Dr. Macpherson says, it is better to suffer for a day or so from the effects of opium, than to suffer an attack of cholera. It is in the true cholera stage, when there is violent and incessant vomiting and purging of the peculiar rice-water evacuations, that antimony is now proposed as the best remedy; it is to be given in full-grain doses every quarter of an hour until the vomiting ceases; not less than three doses should, I think, always be given; and if the vomiting does not cease after the third and fourth, a fifth and a sixth, or more even, may be given; for so long as vomiting continues, greater part is rejected. In those very severe and fatal cases called 'cholera siccæ,' there being no purging or vomiting, I would also give antimony. After the vomiting and purging has ceased, ammonia and ether or brandy should be given in accordance with the amount of prostration or collapse.

"The action of the antimony will soon tell on the skin and kidneys. Other usual external applications will be useful in most cases, but I would give nothing else but spoonfuls of ice-cold water, or ice to suck, by mouth, until the vomiting had ceased, and stimulants were required to relieve in the alter-stage of prostration or collapse. It may appear strange that so powerful a remedy as antimony was but once thought of or tried, and that by a young unknown man in some out-of-the-way station in Bengal, forty-four years ago; but the disease, in its course, has given a strong and generally universal idea that it is a powerful and violent effort of nature to rid the system of an imbibed 'poison,' and as antimony purges and vomits, as well as being diuretic and diaphoretic, it would naturally be looked upon as only adding to the mischief. Did it never strike any one that if opium and astringents are the universally acknowledged remedies used in the preliminary diarrhoea by which the flux is checked, and the outlet for the poison by the bowels cut off, that it cannot be poison? Or, if it is, that the system digests or rids itself of it with the very first diarrhoeal discharges? If not, why such an urgent appeal for opium to check the discharges?"

"If there is poison, where is it? It has never been defined. Is it in the rice-water evacuations? A gentleman in Calcutta has been searching for it in the excretions from the body, but his results, he assured me, were wholly negative, as far as he had tried the effect on living animals; all the excretions were inert, and yet they had been made to swallow large quantities. It may be poison, but we cannot discover the poison, and we always try to shut it up in the system from the very first with opium, or, may be, the opium protects the system from the effects of the poison, and it is with *effects* that we have to deal in true cholera, and those are acute inflammation of the mucous membrane of the stomach and small intestines, and the consequences, and the quickest and most powerful remedy for acute inflammations is antimony.

"Opium does protect the system from threatened inflammations, I believe; and this may be one reason why opium is so signally successful in the preliminary diarrhoea."

"P. S. I meant to have spoken of the earnest way in which Annesley calls attention to the constant connection in epidemic cholera between the seat of the burning pain and the 'vermilion blush,' and the necessity and great use of active measures, early bleeding, &c. This is acute inflammation, and the treatment at that time. Moreover, Annesley remarks that this appearance after death is not found in any other disease.

"Suppose the entire mucous coat inflamed from the cardiac orifice of the stomach to the ileo-cæcal valve, we have, at the lowest computation, nine superficial feet of tissue involved, quite enough to account for the symptoms. What would be the effect of acute inflammation of fully one-half of the skin?"

"*Heat, swelling, redness, and pain* exist in cholera in the tissue involved, these constitute inflammation, the inflammation is specific acute, and runs a certain course, terminating, it may be, in resolution and health, or causing irreparable mischief or killing in its unchecked course.

"Compare the effects of specific inflammation of a few square inches of mucous membrane in coryza."

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31. *The Cholera in the Theatre of War of Bavaria during the Summer of 1866.*—According to R. VOLTZ the cholera was propagated from place to place, in the several localities where it appeared, by the arrival of troops, some of whom were labouring under diarrhoea, or were convalescents from bowel complaints, or were still affected with them as sequelæ of cholera. The propagation of the disease from the first isolated cases until it had spread generally throughout the community, is by Dr. V. traced with great precision. In ten localities cholera prevailed epidemically, in twenty-five other localities it occurred, as it were, in a sporadic form. In the several localities where it became epidemic it differed in respect to its limits, its severity, and its continuance. In neighbouring places of like conditions there would occur an interval of from three to four weeks between its appearance in one and the other, a circumstance inexplicable on the supposition that the production of cholera was due alone to a special morbid condition of atmosphere. Single cases were traceable to an infection

encountered in washing the clothes soiled with the dejections of cholera patients. The correctness of the position of Petenkofer as to the influence in the production of cholera by soils having a wet substratum is by no means established. Under the same conditions as to soil in different localities, the cholera has not appeared. Under the conditions of soil which have been assumed as those opposed to the occurrence of cholera, the disease has been known to prevail to a great extent and in its severest form. Voltz considers, therefore, that a porous wet soil is to be viewed only as one of the exciting causes of cholera, the same as impure water for drinking, crowded localities, poverty, uncleanness, bad food, intemperance, etc.—*Centralblatt f. d. Medicinisch. Wissenschaften*, June, 1868. D. F. C.

32. *Ascending and Descending Breathing: its Value as a Symptom and its Mechanism.*—The peculiar irregularity of breathing referred to in this paper was first described by Dr. Cheyne. The early cases in which the symptom was observed were all cases of fatty degeneration of the heart, and it was supposed to be a symptom pathognomonic of that disease. It was thus described by Dr. Stokes. Among the indications of the malady he says there sometimes occurs "a form of respiratory distress peculiar to this affection, consisting of a period of apparently perfect apnoea, succeeded by feeble and short inspirations, which gradually increase in strength and depth until the respiratory act is carried to the highest pitch of which it seems capable, when the inspirations, pursuing a descending scale, regularly diminish until the commencement of another apnoeal period." Other cases where this symptom was observed, however, occurred in which the heart was found to be free from fatty degeneration, but the left ventricle was found hypertrophied in consequence of valvular or arterial disease. This condition has hitherto generally been associated by writers with a weak state of the right ventricle, or attributed to some perverted action of the nervous centres. Dr. LITTLE offers a new explanation: "In health the right and left ventricles, though differing so much in the thickness of their walls, are equally competent for their duties; the right ventricle is able to fill the pulmonary capillaries as thoroughly as the left one, with the aid of the other forces which contribute to the circulation, fills the systemic. But if an abnormal burden is imposed on the left, if rigid valves narrow its outlet, or permit the blood it discharges at each systole to fall back into its cavity, or if the arterial coats, their elasticity destroyed by disease, no longer help the heart; if the aorta, instead of taking charge of each wave of blood as it leaves the ventricle, and propelling it onward by the steady recoil of its walls, is permanently dilated, and allows each portion of blood to remain in its ascending trunk, and so to impede the entrance of that which follows—under any of these conditions the left heart, however hypertrophied, may be quite unable to rid itself of the blood as rapidly as it is supplied to it by the right ventricle. Blood would, therefore, accumulate in the left auricle, in the pulmonary veins, and in the capillaries of the lungs. That blood having already absorbed as much oxygen as it required, would fail to produce that impression on the ultimate filaments of the pneumogastric which black blood does, and which impression is converted by the nervous centres into the motor impulse which produces breathing. Breathing would, therefore, cease; and inasmuch as the respiratory act seems to assist in carrying the blood to the left side of the heart, it would no longer be so overstimulated by fresh supplies, and its contractions would become less frequent and more regular. After a few systoles, however, it would succeed in discharging the red blood collected in its cavities to such an extent that they could receive some of that which lay in the pulmonary veins and lungs. Space being thus gained, the black blood which the pulmonary artery contained would reach the capillaries of the lung in amount proportionate to that of the arterial which had gone forward, and sufficient air would be drawn into the chest to aerate so much blood. That very act would carry forward a still larger charge of arterial blood to the left side, and make room for the reception, by the lungs, of a still further increase of venous blood, and, as a consequence, a still deeper inspiration would follow, and the deepest would occur when the largest quantity of venous and the smallest quantity of arterial lay in the lungs. The red blood,



reaching the left heart, would excite it to those frequent and irregular contractions which accompany the respiratory distress, but, frequent and irregular, they would be also ineffectual, red blood would begin again to accumulate in the left heart, the pulmonary veins, and the lungs, till at last these capillaries would contain little else, and the exciting cause of inspiration, the venous blood, being no longer present, the act itself would again cease. Precisely similar conditions might, it seems to me, be supplied by fatty degeneration, for if it were—as I believe is often the case—somewhat more advanced in the left than in the right ventricle; or if, in addition to fatty degeneration, disease of the valves or atheromatous deposit in the aorta were present, the balance between the two sides of the heart would be destroyed. In Dr. Cheyne's original case, indeed, it is mentioned that the aorta was studded with steatomatous and earthy concretions."—*Brit. and For. Med.-Chir. Rev.*, October, 1868, from *Dublin Quart. Journ. Med. Sc.*, August, 1868.

33. *Spindle-shaped Enlargement of the Œsophagus*.—H. V. LUSCHKA describes in *Virchow's Archiv.*, xlii., a somewhat unique case of enlargement of the Œsophagus unconnected with contraction of the cardiac orifice of the stomach. The patient, a woman fifty years of age, had possessed from her fifteenth year the power of ejecting voluntarily the contents of her stomach. After death it was found that her Œsophagus measured forty-six Cntr.: the normal length being twenty-nine Cntr. Its medium circumference was fourteen and a half Cntr. while at the seat of enlargement it measured thirty Cntr. in circumference. Its muscular coat exhibited a considerable degree of hypertrophy; the mucous coat presented the evidence of its having been the seat of a high grade of catarrh.—*Centralblatt f. d. Medicinisch. Wissenschaften*, May, 1868.

D. F. C.

34. *Atrophy of the Heart*.—The following general results are presented by Dr. N. FINN, of the Pathologico-Anatom. Institute of St. Petersburg, as having been derived from the examination of one hundred hearts.

1. Simple atrophy is never developed as the only morbid condition. It is unattended by a morbid condition of the cardiac bloodvessels.

2. Neither the absolute or relative weight of the heart, thickness of its walls, nor their reduced circumference can be received as a certain indication of the presence of atrophy of the organ.

3. The brown atrophy of the heart, so-called from a morbid change in the colouring matter of the muscular tissue, is a common accompaniment of all diseases attended with great emaciation.

4. Fatty degeneration of the heart (fatty infiltration) occurs chiefly in persons who have a large development of the subcutaneous adipose tissue; the infiltration is often to such an extent as to prove troublesome.

5. Fatty degeneration of the heart occurs as an acute or a chronic affection. It is observed more frequently on the right than on the left side of the organ. In some cases the entire substance of the walls of the ventricle are affected, in others only a portion. In the chronic form there is always atheromatous degeneration of the cardiac bloodvessels. The *arcus senilis* is never met with in cases of fatty degeneration of the heart.—*Centralblatt f. d. Medicinisch. Wissenschaften*, Aug. 1868.

D. F. C.

35. *Additions to Pathology of the Vascular and Pulmonary Systems*.—Dr. CHARLES R. FRANCIS, in an interesting paper in the *Indian Medical Gazette*, points to fatty degeneration of the heart as a great source of mortality in India. Sometimes it is a cause of death *per se* of awful suddenness, but it may also be the determining cause of death after operation and in the course of (otherwise not mortal) disease. It affects the private soldier more than the officer, because, although both may eat too much, drink too much alcohol, and sleep too much without taking exercise habitually, yet the officer at times gets off to the hills, burns off his superfluous carbon, and exercises his muscular tissue. One great cause Dr. Francis believes to be diminished function of the lungs. That there is diminished function of the lungs in hot climates admits, he says, of remarkable

proof. *They become lessened in bulk.* Dr. Francis was much struck with the comparative lightness of the lungs of persons who had died of cholera. In order to test the value of this fact, in reference to Dr. G. Johnson's well-known theory of spasm of the pulmonary arteries in cholera, he tested the actual weight of the lungs of *all* Europeans dying in India, and found that in almost every case they weighed little more than 30 oz., whilst the normal weight, according to Clendinning, is from 42 to 45 oz. This opens up a new chapter in the cholera controversy.—*Medical Times and Gazette*, Aug. 15, 1868.

36. *Fibroid Phthisis.*—Dr. ANDREW CLARK communicated to the Clinical Society (Feb. 28, 1868) the following case:—

A woman, aged 28, four years married, childless, sprung from healthy parents, said to have been temperate, and to have enjoyed good health till three years before, when she had ascites, from which she recovered in eleven months, began, in July, 1867, to suffer from vomiting, prostration, cough, occasional hæmoptysis, muco-purulent expectoration containing lung-tissue, œdema of extremities, and intermitting diarrhœa, and, becoming rapidly worse, died comatose on December 5 of same year. *Respiratory organs:* On account of weakness of patient, front and lateral parts of chest alone examined. Respirations 20 per minute, and chiefly abdominal. *Examination of left side:* Front depressed, and movement slight. Supra-clavicular region percussion tympanitic; breath sounds blowing; resonance bronchophonic, with echo. From second to fifth rib, and from near sternum to posterior part of axillary region, hard resistant dullness, with considerable retraction of chest-wall. In front of this region, inspiration bronchial, and accompanied by moist subcrepitant râles; expiration dry and not sensibly prolonged. In axillary region breath sounds tubular, and partly masked by coarse crepitation; vocal resonance bronchophonic. At two spots breathing cavernous and voice pectoriloquous; here metallic click is heard coincident with heart's contractions. Along posterior axillary line an occasional creaking-leather sound is heard, and vocal fremitus and vocal resonance are notably diminished. Over lower part of lung, inspiratory murmur harsh; and expiratory murmur, which in its first half is blowing, terminates only after apparent cessation of movements of thoracic walls by a few gentle pulls. A fine dry crepitation is developed by forced inspiration. Ultimately in this region there were uniform dullness, tubular breathing, and bronchophony. *Examination of right lung:* Percussion over anterior third tympanitic; elsewhere normal. Inspiratory murmur harsh and divided; expiratory prolonged, blowing, and accompanied by sibilant rhonchi; vocal resonance increased. No distress of breathing. Cough infrequent, but paroxysmal, and ending in vomiting. Expectoration occurs at close of paroxysms. Sputum muco-purulent, streaked with pigment, and not lumpy. Bands and areolæ of elastic tissue present. *Circulatory organs:* Apex beat at upper border of fourth rib, just outside nipple. Visible pulsatile movement (nearly synchronous with ventricular contraction) in second intercostal space an inch and a half from left border of sternum. Low-pitched systolic murmur at cartilage of second left rib; can be followed a little way upwards and outwards, but not downwards, or to right side; it is increased by deep inspiration, and modified by position. Pulse 74, small. *Summary of post-mortem examination:* Heart small, and displaced upwards; no valvular disease; origin of vessels compressed by solidified lung, with pericardium adherent to it. Right lung, with the exception of some vesicular emphysema and some thickening and congestion of the bronchial mucous membrane, absolutely free from disease. Left lung universally adherent, diminished in bulk, and about its middle third, dense and fibrous. When cut open, the summit was seen to be free from disease. The inferior part was traversed by fibrous septa, some of which, pursuing a horizontal direction, occupied the place of the bronchi and bloodvessels; some, intersecting, occupied the place of the interlobular areolar tissue. Imprisoned portions of lung contained cheesy deposits, at parts broken up into cavities. Several bronchial tubes were dilated, and terminated in ulcerous dilatations. No gray granulation anywhere to be found. Bronchial glands enlarged and cheesy. Liver very large and waxy. Capsule of spleen much thickened. Kidneys granular, and capsule adherent.

All these organs at scattered spots became reddish-brown on the application of iodine; so also did some minute portions of the fibroid deposit in lung. Numerous deposits in and ulcerations of ileum. Mesenteric glands enlarged.

Dr. C. J. B. WILLIAMS regarded the disease called by Dr. Clark fibrous phthisis as of the same nature with that observed in two cases published by himself thirty-three years before. This disease had subsequently been described by Dr. Corrigan, of Dublin, as cirrhosis of the lung. He believed that it always originated in pleuro-pneumonia, and considered that its most characteristic peculiarity consisted in the contraction of the diseased organ, or rather of the fibroid material deposited in it, and in the consequent dilatation of the bronchial tubes. This deposit of what he had then called "cacoplastic" lymph, no doubt often occurred as a disease of itself, but he thought it was most frequent as a modification of ordinary phthisis; its pathological relation to truly tuberculous deposits appeared to him to be very close. The latter, which in his *Principles of Medicine* he had designated "aplastic," seemed to him to differ from the former principally in its tendency to softening and disintegration; but he regarded this difference as one rather of degree than of nature, for all gradations were met with between them. Those cases of phthisis in which the pulmonary disease tends to assume the fibrous character might be generally distinguished by the collapse of the affected side of the chest, and by the displacement of the heart upwards, especially where extensive softening and excavation of the diseased organ had previously taken place. But the character which it is most important to recognize is their slowness of progress, for it is to this tendency to chronicity that they owe their comparative curability. The result of post-mortem examination seemed to show that the anatomical peculiarity of fibrous phthisis consists in the substitution of a fibrous for a corpuscular deposit, which, notwithstanding, is so far "cacoplastic" as to be capable of cheesy degeneration. The marked tendency which exists to obsolescence is indicated by puckering and cicatrization, processes contrasted strongly with the deliquescence and breaking down of tissue which are the anatomical expression of the more acute forms of consumption.—*Med. Times and Gazette*, March 14, 1868.

37. *Cold Water Treatment of Typhus Fever*.—E. BRAND, in a work recently published at Berlin, confirms the observations of Jürgenssen as to the efficacy of cold water, applied externally, in the treatment of typhus. The propriety of a repetition of the cold water he would decide by its effects in the reduction of the temperature of the patient's skin. He directs the application of the cold water to be resorted to and persisted in whenever the temperature at the armpits rises to and continues at 39.50° Cent. Jürgenssen directs this whenever the temperature within the anus is at 40° Cent., and to prevent a rise in the temperature subsequently to the use of the cold bath, that the patient, without being wiped dry, should be put to bed and have his breast and abdomen covered with cloths wet with cold water. By this treatment Dr. B. maintains that in cases of abdominal typhus the occurrence of intestinal ulceration may be prevented; the only inconvenience in any case being the occurrence of a slight catarrhal affection. By this method of treating typhus only from four to six cold baths were required in the course of the twenty-four hours. Dr. B. claims for the treatment of typhus by applications of cold water to the surface, when employed from the commencement of the attack, the promptitude and efficacy of almost a specific; by it, he asserts, typhus (including the exanthematic form) may be materially shortened in duration, and its mortality very much reduced.—*Centralblatt f. d. Medicinisch. Wissenschaften*, 1868. D. F. C.

38. *Capsicum in Delirium Tremens*.—A further experience (see Nos. of this Journal for July, 1866, p. 241, and January, 1867, p. 248) has confirmed Dr. Lyons in his opinions of the value of capsicum in delirium tremens, more especially in those cases in which opium has been already tried and failed to produce sleep.

"In a considerable number of cases, Dr. Lyons has found that a single dose of capsicum—twenty to thirty grains, according to the urgency of the symptoms—suffices to produce rest, sleep, and consciousness. In exceptional instances,

however, a second and even a third dose has been required, before full tranquillity was produced. Thus, in a case recently under treatment in the Hardwicke Hospital, the patient, after a period of tranquillity, had, as it were, a relapse into tremor and delirium, on two distinct occasions, and require a second and third dose of the drug, when eventually full relief to all the symptoms was produced, and the patient was pronounced well.

"As a practical point, it would seem worthy of special comment, that Dr. Lyons has found that the drug is well borne, and tranquillizes the stomach in cases in which irritability and vomiting are present as a very troublesome complication. In several such instances, the administration of the drug has been followed by immediate relief to the gastric symptoms.

"Dr. Lyons sums up his experience of the drug as follows: 1. Capsicum is a valuable and reliable drug when opium fails, or is, for any cause, contraindicated. 2. It is a safe drug for general employment in delirium tremens, and, as such, may be confidently recommended to the country practitioner for general employment. 3. It is not open to the objection which attaches to the continued use of opium, which, when it fails to tranquillize and produce sleep, adds to the state of excitement; and, if pursued beyond a certain limit, kills, as it has undoubtedly done in numerous instances, by suddenly induced opium-coma. 4. In some few instances, Dr. Lyons informs us, he has employed capsicum in the delirium of fever, when opium had failed to induce sleep, and with marked success in certain cases.

"As a member of the family of solanaceous plants, capsicum might, *a priori*, have been expected to contain a narcotic principle. As yet, the alkaloid in which it resides has not been isolated; but, in some researches on the subject, conducted at the request of Dr. Lyons, M. Alphonse Gages, a distinguished member of the chemical staff of the College of Sciences for Ireland, has found sufficient indications of its presence to warrant him in predicting its ultimate detection and isolation. It will, Dr. Lyons expects, form a valuable boon to practical medicine, when isolated and eliminated from the acrid oils of the capsicum fruit."—*Brit. Med. Journal*, Nov. 7, 1868.

39. *Cure of a very advanced Case of Progressive Muscular Atrophy of all the Limbs, by the Constant Galvanic Current.*—Dr. NASEMANN relates a most important instance of the curative effect of the constant current in this terrible disease. The patient was a young man of nineteen; and the complaint seemed to follow measles, and to be immediately precipitated by severe exertion with the arms. The development of the muscular atrophy was uncommonly rapid; only about two and a half months were required to bring about complete paralysis, the patient being able neither to walk, stand, nor sit up. The electric contractility<sup>1</sup> is said to have diminished *pari passu* with the extension of the atrophy. Microscopic examination of portions of the atrophied muscles (extracted with the "harpoon") exhibited fatty change; and it is remarkable that the process of cure seemed to restore the muscular fibres to their primitive healthy condition, without the generation of any new muscular tissue. The peripheral terminations of the nerves were not observed to be degenerated at all. The cure was accomplished by the application of a current from twenty Siemens-Halske's (Daniell) cells. The sittings were ten minutes long, the copper pole being placed on the nape of the neck, the zinc pole on the cervical sympathetic for five minutes each side. This was continued for three months; and during the next three months the copper pole was applied over the lower, and the zinc pole over the upper part of the cervical sympathetic. The improvement was very rapid and decided, beginning to be perceived even after only one week of treatment. It should be mentioned that the induced current, which was tried in the first instance, only gave pain, without doing any good. In less than eighteen months the cure was complete.—*The Practitioner*, Dec. 1868, from *Berlin Klin. Wochenschr.*, 37, 1868.

<sup>1</sup> It is not said whether this was susceptibility to the induced or the constant current.

40. *Experiments on the Use of the Alkaline Hypophosphites in Consumption.*—Some time since Dr. RICHARD PAYNE COTTON published a series of observations (see No. of this Journal for July, 1863, pp. 231-3) on the action of the hypophosphites of lime and soda in tubercular diseases of the lungs, which led him to the conclusion that these substances were merely neutral salts, suited like other neutral salts to cases of consumption complicated with acid dyspepsia, but had no claim to specific action. As they are still regarded, however, by some medical practitioners as remedies of great value, Dr. Cotton has given them another trial, and in the *Med. Times and Gaz.* (Nov. 14th, 1868) he relates twelve hospital cases in which he administered them.

The results of this second trial leads Dr. C. to the following conclusions:

1. That the alkaline hypophosphites have no claim whatever to a specific action upon phthisis.
2. That the good they may sometimes effect is altogether due to their alkaline character, and is equally shared by the alkaline carbonates.
3. That, except in cases requiring alkaline treatment, their employment is absolutely harmful, by excluding the use of positive and appropriate tonics.

Hygiene and hope are most important auxiliaries in the treatment of disease, more especially in such a chronic one as consumption; and it is because we cannot, or at all events we do not, properly separate the effect of these two agents from that of physic proper, that we arrived at such different conclusions upon the action of medicine. A vast number of consumptive cases seem to improve directly they enter the Consumption Hospital, no matter what medicines are prescribed for them. They have exchanged the troubles of want and anxiety for the comforts of plenty and repose; they breathe a pure, warm, and healthy atmosphere, to which they have been hitherto strangers; and their minds become suddenly occupied with happy and hopeful anticipations. Others, again, scarcely improve until some dyspeptic complication has been successfully combated, some of these manifestly deriving benefit from alkaline, others from the mineral acid treatment. Some are at once improved by steel; others by quinine, or some other form of general tonic; but if amongst all this uncertainty there be anything certain, it is that there is no real specific for consumption.

If in cases associated with acid dyspepsia, and requiring alkaline treatment, the hypophosphites of lime and soda are often successful, the same may be said of other alkaline salts; and if it be contended that in such cases the hypophosphurous acid is a specific, I maintain that, upon similar evidence, carbonic acid is equally so; it is in each case the base, and not the acid, which is effective.

Some practitioners are in the habit of employing the hypophosphites of iron and of quinine, and doubtless with advantage. The citrates of iron and of quinine also are well-known remedies, and are very often useful in the treatment of phthisis, but it is to the base, and not to the acid, that their good effect is attributable. It would be as reasonable to give the due in the one case to the citric acid, as in the other to the hypophosphurous acid.

The hypophosphites of lime and soda are, I repeat, nothing more than simple unirritating antacid salts, suited, just as many other salts of the same class very frequently are, to certain cases of phthisis requiring alkaline remedies, and they have not even the shadow of a claim to special or specific action in any form of consumptive disease.<sup>1</sup>

41. *Inhalation of an Aqueous Solution of Carbolic Acid under the Form of Spray for the Treatment of Phthisis.*—Dr. WM. MARGET states (*The Practitioner*, Nov. 1868), that considering the phenomena of chemical decomposition

<sup>1</sup> The following is the substance of a note from Mr. Gill, Resident Clinical Assistant at the Hospital for Consumption, Brompton:—

"DEAR DR. COTTON: As you have asked me to give my opinion of the action of the hypophosphites of soda and lime upon the tubercular diseases, I beg to state that I have taken careful notes of the twelve cases in this hospital which were under your charge, and my decided opinion is that they are useless so far as specific effect is concerned; but that in some cases benefit has been derived from their local action as alkaline salts on the dyspepsias to which some of these patients were subject, exactly the same benefit being derived from small doses of the bicarbonate of soda.

Yours truly,

H. C. GILL, M.R.C.S."

which must take place in the diseased portions of the pulmonary tissue in phthisis, owing to their low state of vitality, it occurred to him that if an antiseptic agent could be introduced into the lungs without interfering with the general functions of the body the progress of the disease might be arrested or its mortality diminished. He, therefore, decided to try carbolic acid in the *form of spray*, as that most likely to cause the antiseptic agent to remain in contact with the diseased parts for some little time before its absorption in the blood.

Dr. M. relates seven cases treated by this method, and sums up the results of his experiments as follows:—

“1st. When a solution of from half a grain to one and a half grains of crystallized carbolic acid in one ounce of water is inhaled in the form of spray by a patient in the chronic first stage of phthisis before softening has taken place, and perhaps also when the process of softening is just commencing, or at the very outset of the second stage, relief is thereby obtained, and in some cases it appears to assist, with other means, in arresting the disease. After using the spray, the patients feel as if their breathing becomes easier and deeper; on moving about and going up stairs there is less dyspnoea; the stitch often felt, or the sudden check to the expansion of the chest in the act of breathing, is partly or entirely removed, cough is frequently relieved, and the expectoration may be considerably diminished. The absorption of any fluid in the smaller bronchi and pulmonary vesicles appears to be favoured, as shown by a lessening of the crepitation. I cannot confidently assert that I have known any plastic material in the lungs to be absorbed while the spray was being used, still I believe that in some of my cases the dulness on percussion has diminished, and even disappeared, partly from the effects of the carbolic acid spray. The treatment with the spray should not be adopted exclusively, but in addition to the use of counter-irritation, cod-liver oil, etc.

“2d. In cases of acute second and third stages of phthisis, when the process of softening is going on rapidly, accompanied with a quick pulse, high temperature, debility, and emaciation, the inhalation of the carbolic acid spray, although it may afford temporary relief, appears objectionable, from its depressing influence over the action of the heart. I should also think it advisable to withhold the use of the spray in the first acute stage.

“3d. A solution of carbolic acid, containing more than two grains to the ounce, should, as a rule, not be used, from its depressing action on the cardiac pulsations.

“From the above it will be seen that the spray should be employed with great caution; and if giddiness, faintness, trembling, with a permanently weakened pulse, or any increased irritation in the lungs, should result from the treatment, it ought to be at once discontinued.

“I am in the habit of using the spray as obtained from Clarke's Hand-ball Spray Producer; sometimes I have adopted Mathieu's Spray Producer, in which the liquid is projected against the inside of a tube and thus atomized. I have tried and given up the steam spray-producing apparatus on account of the difficulty of regulating its action. It appears to me sufficient to inhale the spray once a day, or once every two days, for a quarter of an hour or twenty minutes.”

42. *Lactic Acid in Removal of False Membranes.*—In the number of this Journal for Oct. 1868, page 562, we published the results of M. Bricheateau's experiments on the best solvents for false mucons membranes. Clinical observations now come to hand in a letter addressed to the *Bulletin de Thérapeutique* (Sept. 15) by M. le Dr. DUREAU. Here, says the writer, are the results I obtained by the application of lactic acid: 1st case, a child four years old, who had been two days ill. There was well-marked fever, drowsiness, depression, painful swelling of the maxillary glands, very thick membranes on the velum palati, the tonsils, and pharynx, and deglutition impossible. Prescription—to touch the affected parts with the solution, and to prolong the contact as long as possible. This was on the 4th of the month. On the 5th, the false membranes were completely detached, and were replaced by a delicate, whitish, semi-transparent pellicle, and the patient was able to swallow soup. On the 6th and 7th some small points remained; on the 8th all these had disappeared;

gargles and emulcent drinks were administered; and on the 9th the recovery was complete. 2d case, the patient had false membrane on the left tonsils on the 8th, and was well on the 9th. M. Dureau gives three other similar cases, in all of which a cure was rapidly produced by the local application of the lactic acid. He concludes by saying that lactic acid is an excellent remedy. It dissolves the false membranes perfectly, and effects a cure more rapidly than anything that has yet been tried. It is devoid of all disagreeable taste—a point of some value in treating children. Being a very innocuous substance, it may be used with safety even by the most inexperienced persons. Finally, if lactic acid be not a specific for all pseudo-membranous affections, it can by the rapidity of its action, prevent diphtheritic infection; and that is a property of no mean value.—*The Practitioner*, Nov. 1868.

43. *Ergotin in Dysentery*.—GROS (*Allg. Wiener. Med. Ztg.*, 1868) recommends ergotin as a valuable remedy in dysentery. A short history is given of forty-four cases; nineteen of a very severe character, in which he found the ergotin to exert a very beneficial influence. Dr. G. gave it inwardly in doses of twelve to fifteen grains, or as an injection per anum in the form of a strong decoction. The beneficial working of the remedy was generally found to occur very quickly, though occasionally not until at the end of two or three days. The tenesmus ceases, the effort at stool becomes less frequent, the discharges less copious, and their peculiar smell less intense.—*Centralblatt f. d. Medicinisch. Wissenschaften*, Aug. 1868. D. F. C.

44. *Peroxide of Hydrogen in Diabetes*.—MR. S. J. BAYFIELD has published (*Brit. Med. Journ.*, Oct. 17, 1868) a case of diabetes cured by peroxide of hydrogen. He commenced with half drachm doses of the ethereal essence of the peroxide, gradually increasing it to three drachms a day. He also materially relaxed the patient's diet, substituting more agreeable articles for those he did not like. After ten weeks' steady perseverance with occasional fluctuation, the patient quite recovered, and has kept well for several weeks.

45. *Iodide of Sodium in Lead Poisoning*.—M. RABUTEAU advises (*Gaz. Hebdom.*) that the iodide of sodium should be used in treating lead poisoning instead of the iodide of potassium. The former, he says, is as active an eliminant as the latter, and does not produce any ill effects.

## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

46. *Mediate Irrigation*.—Under this name M. PETITGAUD, a French military surgeon, describes (*Recueil de Mémoires de Médecine, de Chirurgie et de Pharmacie Militaires*, Décembre, 1866, p. 506) the various methods employed for the application of hot or cold water to various parts of the body, through the medium of vessels of caoutchouc or other material. The idea of this method of modifying the temperature of inflamed or otherwise diseased parts, is indeed, as confessed by the author, by no means new; but the particular apparatus which he has devised for the purpose is so simple and at the same time so well adapted for the end in view, as to reflect great credit upon M. Petitgand's ingenuity. He employs tubes of vulcanized India rubber, sixteen or twenty feet in length, and about half an inch in diameter, the thickness of the tube wall usually not exceeding a single line. These tubes may be applied to a limb, like a simple spiral bandage, being retained in place by a few turns of a roller, or they may be coiled into any shape that may be required for application to a joint, to the head, or to the female breast. The tubes can be readily kept in position by a few strips of bandage made to pass alternately above and below the contiguous spiral coils. The tube acting like a siphon, a

continuous current of water of any given temperature can be made to pass over or around any part of the body, without the annoyance of wetting the pillows or bedclothes, and other evils which are unavoidable in the ordinary way of using irrigation. The application of M. Petitgaud's simple method is clearly illustrated by several wood-cuts, which, of course, make the matter more easy to be understood than can be done by a mere verbal description. The number of cases in which this very simple and easily prepared apparatus may be advantageously employed is, of course, very great: inflamed joints, injuries of the head, stumps, cases of inflamed breast, and many other surgical affections, together with the large number of functional disorders which it is now fashionable to treat by heat or cold to the spine—for all these, M. Petitgaud's device seems to offer a mode of treatment theoretically perfect, and which, we doubt not, will be found in practice a real improvement over the methods hitherto proposed.—J. A., JR.

47. *Treatment of Aneurism by Iodide of Potassium.*—DR. GEO. W. BALFOUR relates (*Edinburgh Med. Journ.*, July, 1868) three cases of aneurism treated by the iodide of potassium, and states that such has been his experience that he feels justified in recommending this method of treatment as one which, to say the least of it, is capable of relieving the sufferings of such patients without discomfort and without danger.

Of fifteen cases of aneurism which, so far as Dr. B. knows, "comprise all the cases of this disease already published, in which the treatment by iodide of potassium has been persistently carried out, there has been in all save one—and that a perfectly hopeless case—a marked relief to the suffering; in twelve there has been undoubted diminution in the size of the sac, while in a few, the number of which a longer continuance of the treatment has ere now probably increased, there has been so complete a subsidence of the tumour and relief of all the symptoms as to amount to an apparently perfect cure. These results are extremely encouraging; and when we reflect upon the entire absence of any risk to the patient from the treatment, and the almost absolute certainty of relief to his sufferings being at least attained, I think we are warranted in saying that no treatment for aneurism, and especially for internal aneurism hitherto devised, holds out anything like an equal prospect of relief, if not of cure, with that by the iodide of potassium.

"To attain these objects fully, several circumstances must be carefully attended to, and the first of these is the dose of the remedy to be administered. In the cases related, the dose has varied from five grains to thirty, three times a day. In one case ten grains thrice a day produced violent salivation, which ceased on a reduction of the dose to five grains; in another, twenty grains thrice a day seemed to produce violent diarrhœa, which also ceased on a reduction of the dose to five grains. In one of my own cases, considerable coryza was produced at first, while the patient was taking only twenty grains thrice a day; but this rapidly ceased upon intermitting the remedy, and did not subsequently recur, though the dose was afterwards increased to thirty grains thrice a day, and continued many months. In my other two cases, thirty grains twice a day were administered, without any ill effects from the first; in one of them, however, pain in the stomach or head occasionally supervened, but was at once relieved by intermitting the remedy for a few days. Now, whether the action of this remedy consists in altering chemically the constituents of the blood, or in influencing in some unknown manner the vitality of the blood, or of the organs in which it circulates, it seems probable that it is in some measure proportionate to the quantity ingested, because the relief of pain, which is one of the earliest symptoms of amendment, is not produced till a certain efficient dose has been given. It seems therefore of consequence to attain that efficient dose as rapidly as possible, and whether it be that a large dose more readily establishes a tolerance of this remedy or not, there is certainly no evidence as yet before us to prove that this drug can be more safely administered by beginning with small doses, and gradually increasing them, than by commencing with full doses, as of thirty grains at once, intermitting them occasionally for a day or two on the occurrence of any symptoms which seem to call for this. In attempting to



produce the specific action of iodide of potassium, saturation of the blood seems to be imperatively required by the rapidity with which the secreting organs, and especially the kidneys, remove it from the system—twenty-four to seventy-two<sup>1</sup> hours' abstinence from the drug having always sufficed to cause the disappearance of every trace of its presence from the urine. While the continuous administration of large doses may possibly in time succeed in saturating not only the blood, but even the tissues, at all events some such effect seemed to have been produced in Case I., in whom, in the latter months of his treatment, the application of a belladonna plaster was always followed by vesication and an eczematous eruption, although he had previously worn such plasters for many months without any ill effects, and it was only after this thorough saturation was attained that this patient's improvement progressed with any rapidity. From the apparent importance of this element of saturation, and the safety with which it can be produced in most cases, its attainment being evidently not necessarily connected with the development of any unpleasant symptoms, which occasionally then cease to appear, though they have been present at an earlier stage of the treatment, the proper procedure in all cases in which unpleasant symptoms arise, would seem to be not diminution of the dose, but temporary intermission of the drug,<sup>2</sup> and possibly, in some instances, its combination with some counteracting agent, such as opium. And I make this suggestion the more readily because, though large doses of this drug have unquestionably a greater tendency to irritate the gastro-intestinal mucous membrane—an irritation which may be checked by intermitting the drug, or altering its mode of administration—other unpleasant symptoms, such as coryza, etc., do not seem to be necessarily connected with largeness of the dose, but seem referable more to idiosyncrasy than to poisonous action. The only severe case of coryza which I have seen produced in this manner has been apparently due to the trifling amount of the iodide contained as an impurity in a few drachms of the bromide of potassium—the bromide itself, I believe producing no such effect.

“As to the length of time during which this treatment ought to be continued, we have as yet no means of judging. Many of the cases I have quoted seem to point to a few weeks as sufficient to establish a curative result, but this has not been my experience. A certain amount of relief may no doubt be rapidly attained, but any considerable amendment has only been procured after keeping the patient for many months persistently saturated with the drug; and I should not consider that this treatment had a fair trial, unless it had been carefully carried out for at least twelve months, while it is probable that the full benefit is not to be derived, in many cases at least, except by a steady persistence in its use for several years. But this treatment is of too recent introduction to say anything positive on this head.

“In regard to the adjuvant treatment, there are one or two remarks to make which seem to me of considerable importance, and these may be comprised under the two heads of position and diet. Whatever is capable of lessening the frequency of the heart's action, without impairing the strength of the patient, or vitiating the quality of his blood, cannot be an unimportant adjuvant in the treatment of aneurism. The enforcement of the recumbent position, therefore, which is so influential in this respect, has seemed to me a matter of paramount necessity, and has been strictly carried out in all of my three cases; indeed, in the most serious one (Case I.), the patient was laid upon his back for fully seven of the eight months he was in my ward, not being permitted even to turn upon his side—any attempt to do so being always attended by a recurrence to some extent of the pain, along with an uncomfortable sensation of pulsation. I

<sup>1</sup> The amount was always much lessened after twenty-four hours' abstinence; after forty-eight hours, there was a mere trace, and this had quite disappeared after seventy-two hours.

<sup>2</sup> Rosenthal, *Wien. Med. Halle*, vol. iii. No. 20, 1862, and *New Syd. Soc. Year Book* for 1862, p. 433, states that free dilution aids in removing the iodide from the system, and I can confirm his statement that, even when it has been given continuously for months, from twenty to seventy-two hours is sufficient to remove all trace of it from the urine.

have no doubt that the success attained in his case is very considerably due to the long-continued perfect rest in the recumbent position; and in the treatment of so serious a disease as internal aneurism, I should consider it most unwise to neglect the employment of this simple but efficient mode of aiding the cure. No doubt the enforcement of this portion of the treatment is irksome and impossible of attainment without the intelligent acquiescence of the patient, but I have not had any difficulty in obtaining this, on explaining my reasons, and the object I had in view; and I may make the same remark as to diet. Aware of the evils of starvation on the one hand, and of plethora on the other, my patients were put upon a somewhat restricted mixed diet—fish being given for dinner, at first at all events, as being the least nutritious form of animal food, while they were told voluntarily to restrain their appetite as much as possible, and to make use of no more than what they felt to be sufficient to maintain themselves. In regard to fluids, water, tea, or milk alone were allowed; and though they were not doled out in a measured quantity, yet similar directions were given in regard to them as in regard to solid food; explanations were given in regard to the result desired, and the evils to be avoided, and careful inquiries were daily made as to the mode in which these advices were being complied with, so as to impress their necessity and importance upon the patients. I have had no reason to be dissatisfied with the result of this reciprocal confidence between patient and physician, and I believe it to be more conducive to the well-being and the comfort of the former, than any more precise definition of amounts by weights and measures. The principles of the treatment were intelligibly laid down, and intelligently acted upon, and the effects daily noted, and the result has been that all of my patients have, without becoming plethoric, yet preserved a healthy and well-nourished appearance throughout the whole of their tedious treatment."

As regards the mode of action of the iodide of potassium, Dr. B. does not agree with Dr. Chuckerbutty and Dr. Roberts that it increases the coagulability of the blood. "This," he says, "would not explain the great relief to the pain which is the almost immediate result of the ingestion of an efficient dose. Moreover, large doses of iodide of potassium relieve the pain of many cases of rheumatism, and the distressing spasm of asthma; in the latter disease, indeed, far larger doses have been given than that I have recommended—Dr. Aubrée having successfully treated several cases with doses of forty-five grains three times a day;† these are diseases in which increased coagulability of the blood is not likely to be beneficial, yet the relief to suffering in all of these cases is very marked, and, at all events, as regards rheumatism and aneurism, very similar in character. So far as I know, no one has hitherto attributed to the iodide of potassium sedative properties similar to those known to be possessed by the bromide; yet it is possible that it may act as a sedative to the nervous system, modifying its action in some unknown manner, and it is probable that its curative action in all these cases is due to this peculiar modification of nervous action—the coagulation of the blood in the aneurismal sac being the result of secondary causes. In Case II., this treatment produced an immediate and remarkable effect in lessening the fulness and force of the pulsations, not only in the tumour, but throughout the whole arterial system, and this not to our observation alone, but also as perceived by the man himself. This sedative action, which must have been exerted primarily on the nervous system, must no doubt favour greatly the coagulation of blood in an aneurismal sac; though not observed, it may have existed in the other cases, and it gives the only rational explanation of the peculiar effects of the iodide according to our present knowledge. I regret that in none of my cases was the sphygmograph employed to record the force of the arterial pulsations; and thus to detect any deviations produced by treatment: in any subsequent cases that may come under my care, I shall endeavour to do this so as to settle this matter.

"I need hardly say that, notwithstanding the great and manifest relief obtained in almost all cases of aneurism by this treatment, positive cures can only be exceptional, of comparatively rare occurrence, and the result of long-con-

† Trousseau's Clinical Medicine, New Syd. Soc. Ed., vol. i. p. 656.

tinued, and careful treatment. An aneurism may prove fatal in so many various ways besides rupture, that the mere coagulation of the blood within the sac is a comparatively small step towards a complete cure, though by no means an unimportant one. The relief obtained can only be regarded as unequivocally tending towards a cure, when, from the symptoms, it is apparent that the aneurism is not only becoming more solid, but also shrinking in all its dimensions; and even then incautious exertion may rupture the sac at some point where fluid blood may still communicate with the arterial canal, and death may thus ensue while the patient is flattering himself that he is being cured. Compression of important organs by the solidified sac may also induce dangerous and even fatal complications. And even under the most favourable circumstances, the occurrence of aneurism of a large and important artery proves the existence of such a diseased condition of the arterial coats as will render the patient's life ever after a precarious one.

"Notwithstanding the great relief to the symptoms in almost every case, it is obvious that anything beyond this—anything at all approaching to a cure—can only be expected in sacculated aneurisms, and chiefly in comparatively young individuals, and in cases more or less of a traumatic character, that is, produced by unusual exertion, as evincing a possibly less seriously diseased condition of the arterial coats than where the aneurism has occurred more gradually, and, as it were spontaneously. On the other hand, when the aneurism has been of slow and spontaneous growth, these very circumstances, evincing as they do the existence of a greatly diseased condition of the arterial coats, would form unfavourable elements in estimating the probability or completeness of a cure; and the presence of more than one aneurism in the same person would seem likely to reduce still further the chances of anything beyond mere temporary improvement; but as the history of Case III. shows, even in such cases this improvement may be so great as to be well worth all the trouble expended in attaining it.

"In conclusion, I may state that being fully aware of the fallacious character of the argument from *post* to *propter*, which has been unavoidably employed in regard to the method of treatment now recommended, in a disease which, like aneurism, occasionally undergoes spontaneous abatement, I am by no means desirous of placing an undue value on the cases related or the results obtained, which as yet are too few and too unsatisfactory to enable us to assign any very high or definite curative value to the treatment of aneurism by iodide of potassium. I have been simply desirous of pointing out that, in the hands of different observers, not all even of the same nation, whole series of cases have obtained a relief so great and well-marked, as fully to entitle this method of treatment to a more extended trial by which its true value may be more correctly ascertained."

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48. *Ovarian Cystic Tumour Cured by Bromide of Potassium*.—Dr. JOHN MILLAR relates (*Edin. Med. Journ.*, Nov. 1868) a case of this which is interesting, as it serves to show that bromide of potassium exercises an influence by its deobstruent powers in absorbing and removing the fluid contents of an ovarian cyst.

The subject of the case was a widow æt. 48, mother of six children, who came under Dr. M.'s care in August 1866. She had enjoyed good health up to that time, but then complained of weight in pelvic region, with loss of flesh and strength. Tonics were given without much benefit; the pelvic symptoms increased and there was difficulty in making water. On examination then per vaginam and rectum, a small defined tuberoso tumour was felt in the left ovary. This enlarged, the patient's health suffered, and February 1, 1867, Dr. M. tapped her and drew off 80 oz. of a dark-coloured serous fluid. This afforded considerable relief at the time; but two days afterwards the patient complained of very acute pain in the region of the tumour, preventing sleep; nausea supervened with vomiting, and Sir James Simpson was called in consultation on the 6th of February, 1867. After a careful examination of the abdomen and the state of the patient, Sir James Simpson recommended the trial of the bromide of potassium in small doses, 5 grs. three times a day, with ice for the severe

sickness and vomiting. Hot poultices, sprinkled with turpentine, were constantly applied to the left side, which was the seat of pain. Under the use of the bromide of potassium, the pain gradually diminished, but with the absence of pain there seemed to be a tendency to a return in size of the tumour, as some fulness was evident on examination in the left side.

Anticipating a return of the serous fluid, Sir James Simpson, the next time he saw the patient, on the 20th of February, recommended the dose of the bromide of potassium to be doubled, which it accordingly was to 10 grs. three times a day, with very beneficial results, as the tumour within a few weeks became palpably diminished in bulk. During this period the patient perspired very copiously, and passed a large quantity of very dark-coloured urine. This improvement gradually went on during February and March, until in the beginning of April, when she was prostrated by an acute attack of gastritis, brought on by indulging in a glass of porter—a beverage so long forbidden that she could not resist the temptation with her returning strength to partake of it. Under the use of appropriate remedies the attack subsided, but became prolonged into a chronic condition, due to her constitutional weakness, during which time she had to be supported principally by nourishing enemata. As the use of the bromide of potassium was during this attack of gastritis suspended, the tumour, which had been reduced to a very small compass, gradually resumed its former size and bulk, so that in the latter end of May she presented very similar symptoms to those she experienced in January—so much so that I was under the impression that it would be again necessary to tap her. However, I again consulted Sir James Simpson, who recommended the renewal of the bromide of potassium in larger doses than before, so that she now received 15 grs. three times a day with marked benefit: and not only so, she had less repugnance to the medicine than formerly, as she insisted that the nausea, of which she had reason to complain so much, was due to this medicine, and was therefore unwilling to renew it; but with a larger dose she experienced none of the former sickening effects. I may here mention that a similar thing happened in another of my patients, who for nervous debility was ordered the bromide of potassium, and who under small doses took a great repugnance to the medicine: but on its being renewed in larger doses, she experienced none of the sickness and nausea with which she was previously troubled.

Under the continuous use of the bromide of potassium the tumour gradually diminished in size; and, wishing to mark the progress of the diminution, the patient was desired to measure the width of the abdomen on a level with the umbilicus, when, within three weeks, from the last week of May to the third week of June, the decrease was from 48 inches to 33 inches. At the same time her general health greatly improved, the extreme tenderness of the abdomen which followed the acute pain she suffered in the beginning of the year also entirely disappeared; so much so that she was able to sit up in bed, and bear the pressure of her stays. The difficulty in making as well as retaining her water entirely disappeared; and it was only on examination, per rectum, that a small excrescence on the left ovary could be felt—the shrivelled remains of the ovarian cysts. In the beginning of July the patient was able to leave her couch, and by the end of that month she was sufficiently strong to go out and undergo without fatigue a moderate amount of exercise. Within a short time afterwards she returned to her usual occupation and domestic duties, and since then has, with the exception of one or two attacks of bronchitis, enjoyed pretty good health. At present her health is not very robust, yet she is able to go about her usual avocations; and, with the exception of now and then feeling a sense of weakness in the left side, no traces remain of her former complaint.

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49. *Cyst of the Thyroid treated by Cauterization by Chloride of Zinc.*—Under the care of M. SÉDILLOT.—Tumours of the thyroid are so important surgically, from their variety, their interference with the cerebral circulation, the voice, and the respiration, the deformity they produce, and the dangers of the operations practised for their relief, that we believe any new observation will prove interesting. The inhabitants of Alsace, where goitre is endemic in cer-

tain districts, are frequently attacked by such tumours, so that the clinique of Strasburg offers frequent examples. M. Sedillot is interested in this subject, and Professor Bach has lately obtained a prize from the Academy for a memoir on bronchocele, which will shortly appear.

M. Sedillot has introduced into the surgical history of bronchocele many distinctions of great practical importance. In his opinion, simple bronchoceles, inconvenient only from their size, ought to be left entirely alone; no operation is applicable to them, and ligature of the entire tumour or of the four arteries, extirpation or cauterization, have no well-authenticated good results; and have unfortunately, in most cases, been followed by very severe accidents. Surgery should in such cases interfere only when it is required to remedy grave complications involving the larynx, trachea, or œsophagus. The concentric form of goitres, which threaten life either by suffocation or starvation, may be included in this category, and M. Sedillot has published cases of this nature.

Certain cysts developed in the substance of the thyroid gland, and which are only exaggerations of the natural lacunæ we meet with in it, have been justly named "hemorrhagic cysts," as the blood flows from these walls when they are opened. Such hemorrhages are very dangerous, on account of the difficulty of arresting them, since they come from extensive soft and very vascular surfaces, and their relations to the larynx and trachea make compression, cauterization, or extirpation, all exceedingly dangerous and difficult. The conditions of operations are very favourable in those cases of accidental tumours more or less independent of the mass of the tissue of the thyroid, whether in its centre, or at the circumference. Partial hypertrophies, pediculated, fibrous, or encysted tumours, whether single or numerous, filled with varying contents; hydroceles of the neck, as Maunoir called them, have been operated on with success. These distinctions give a certain amount of decision to our prognosis, and help the surgeon to decide as to which cases he should interfere with, and which he should let alone. (The following account of the case is considerably abridged from the original):—

E. D., 21, a pale, but well-formed young man, has below his hyoid a round mobile tumour, which has grown slowly to the size of a large apple. It lies below the edges of the sterno-mastoids, and behind the upper border of the sternum. It is firm at its circumference, soft and fluctuating in the centre. *Diagnosis*—hypertrophy of the thyroid, with a large cyst, the thick walls of which consist of gland tissue. The breathing and voice are affected, and the swallowing a morsel produces strangulation. The tumour has been twice tapped; the first time, a basin of blood escaped; the second was followed by an injection of tincture of iodine. The patient requests at all hazards to be relieved of the tumour. After a few days' waiting to get rid of the inflammation produced by the injection, M. Sedillot proceeded to treat the tumour. He first destroyed a portion of skin in the middle line of the neck by Vienna paste, and subsequently by an application of *Canquoin paste*. This was followed by several days of fever and oppression; and on the eleventh day, the eschar separated, and slight hemorrhage occurred; the eschar was renewed. Pulse 130 on the seventeenth day; a very severe hemorrhage occurred, which was stopped by perchloride of iron. During the next eleven days, repeated and severe hemorrhages, always stopped by new cauterizations and compressions, brought the patient to the verge of the grave. At this date, the bleedings ceased, the tumour gradually decreased in size, and began to heal up by granulation. Two months afterwards, the wound was healed; the goitre was still there, but a depressed cicatrix showed where the tumour had been.

This operation *did* succeed, but M. Sedillot remarked on it, that the repeated hemorrhages which brought the patient into such danger should inspire great caution and reserve, and that surgery possessed no plan of operation capable of inspiring confidence in the treatment of such cases; that change of air and general regime, with the use of iodine internally, were safer modes of treatment. The truth of these observations has been confirmed by the case of an attempt at the total extirpation of such a tumour in a girl of eighteen, which we lately witnessed. The tumour was dissected out, isolated, and its base tied by a most

distinguished surgeon; and although the patient bore the operation well, she died suddenly about four hours after, from suffocation.—*Ed. Méd. Journ.*, Aug. 1868, from *Gaz. des Hôpitaux*, No. 45, 1868.

50. *Tetanus Cured with Large Doses of Indian Hemp*.—Dr. S. G. CHUCKERBUTTY relates (*Indian Annals of Med. Science*, July, 1868) the results of this treatment in thirteen cases. In six of these death occurred from the tetanus; the other seven distinctly recovered from the tetanus, though of these three died ultimately from other diseases (dysentery and hepatic abscess, bronchitis, pleurisy). Hemp was administered in 30 to 40 minim doses of the tincture every two or three hours. It can only be said to have been fairly tried at all in eight out of the thirteen cases, as the remaining five were so very far advanced as to be hopeless.—*The Practitioner*, Dec. 1868.

51. *Spontaneous Popliteal Aneurism occurring in a Diabetic Subject; Failure of Mechanical Compression; Cured by Forced Flexion*.—M. VERNEUIL communicated a case of this to the Academy of Medicine of Paris, the interest of which consists in the coincidence of the diabetes, and in the fact of compression, which is usually so efficacious and so innocent, having failed and even produced local lesions of some importance. M. Verneuil terminated his narration with these propositions: 1. The coincidence of spontaneous aneurisms with diabetes, although it has not before been remarked upon, demands serious attention, as it exerts great influence in the choice of the procedure, and raises new questions on the etiology of aneurisms, and the composition and properties of the blood in diabetic subjects. 2. It almost absolutely contraindicates the employment of the ligature, and renders the application of compression very difficult, in consequence of the ease with which eschars are formed under the pads of the apparatus. 3. In spite of the presence of glucose, the blood appears to preserve its plastic properties, or, in other words, its aptitude to deposit fibrinous layers in the sac or active coagula. 4. The anti-diabetic regimen, so different from that ordinarily prescribed during the mechanical treatment of aneurism, does not destroy this aptitude. It would seem, then, prudent to institute such treatment when the general condition calls for it, and to persist in it even after the real or apparent disappearance of the glucose. 5. In popliteal aneurism, the forced flexion of the leg on the thigh is a very important procedure calling for renewed trials. It is harmless, of easy application, and little onerous, inasmuch as it requires neither costly apparatus nor numerous assistants. It demands on the part of the patient a little intelligence and perseverance, and on that of the surgeon a surveillance easy of execution. 6. In some cases it has been attended with very rapid success in the hands of the English surgeons; but in those in which its first trials prove fruitless, it may eventually succeed by employing short *séances* at long intervals. 7. Its efficacy doubtless depends upon certain conditions, which have as yet been little studied, such as the position and dimensions of the vascular fissure, the relations, dimensions, and consistency of the sac, etc. In the present case it has probably operated as indirect compression. 8. The prolonged, unnatural direction imparted to the knee-joint has given rise to no serious inconvenience, the articular stiffness gradually disappearing, and the limb recovering all the amplitude of its movements. 9. The cure, it must be admitted, required a very long time: but then it must be recollected that without flexion it might have been altogether impossible, and most certainly would have been more painful and dangerous. 10. It is true that attitude has been aided by other accessory means, such as direct and indirect compression, but it is to it that recovery is chiefly due. It confirms the conclusion that, in difficult surgical cases, the practitioner, far from obstinately confining himself to a single means, should assemble, combine, and concentrate all the resources which science has placed in his hands.

52. *Reduction of Dislocations after the Subcutaneous Injection of Acetate of Morphia*.—Dr. THIERFELDER relates four cases in which reduction of dislocations, which had resisted the efforts made, speedily yielded after narcosis had

been induced by the injection of from one-half to one-fifth of a grain of morphia. The cases he tried the plan in were examples of luxations of the humerus, the elbow, and the femur, and their narration bears out his statement of its efficacy. He says: "1. That the necessary degree of narcosis, producing muscular relaxation is much more certainly and readily obtained by the morphia than by the inhalation of chloroform. 2. This amount of narcosis produced by morphia, contrariwise to what is observed in the use of chloroform, is attended with little or no loss of consciousness—a circumstance of great consequence when we consider how disturbing the loss of sensibility is to the operator. In drinkers, too, chloroform gives rise to excitement rather than to anaesthesia, while in such persons (who are especially liable to this class of accidents) morphia thus employed forms a very certain means of treatment. 3. In luxations occurring in subjects suffering from organic disease in which chloroform is contraindicated, the morphia is admissible. 4. The simplicity of the apparatus required enables the practitioner to always have it at hand. 5. The special assistance required in the administration of chloroform is no longer necessary."—*British and Foreign Med.-Chir. Rev.*, Oct. 1868, from *Ploss' Zeitschrift für Med. und Chir.* No. 4.

53. *Medico-lateral Operation for Lithotomy.*—Mr. HENRY LEE, in a paper read before the Medical Society of London, described the mode of performing this operation, and said it combined the advantages of all the other methods that had been recommended, without many of their disadvantages. The urethra, in Mr. Lee's operation, is entered in the median line, which he considers insures the success of the operation as far as the surgeon is concerned, while the incision is carried round the front and left side of the rectum so as to leave a sufficiently large external opening. The patient, for this operation, is placed in the ordinary position for lithotomy, and a grooved staff is introduced into the bladder; the skin of the scrotum is held moderately tight by an assistant; an incision is then made in the median line of the perinaeum from before backwards. This should extend through its posterior half, terminating two or three lines in front of the anus. From this point the incision is continued for a quarter of a circle round the front and left side of the rectum. The finger of the left hand may then be put into the wound, and the rectum pressed back, whilst an additional touch or two of the knife separates it still further from the parts in front. The forefinger of the left hand is now passed into the rectum, and the knife, with its back towards the bowel, is passed, at the posterior part of the central incision, into the membranous portion of the urethra. With the finger as a guide, this is done with great ease and certainty. A bistoury, or a knife, with a probe at its extremity, is then passed into the same opening, and made to slide along the staff into the bladder. The forceps or any other instruments that may be used are also introduced more directly into the bladder than in the ordinary lateral operation. The incision is made into the prostate gland, is made from within outward, and this Mr. Lee considered an advantage. In children a single incision with the scalpel is sufficient, but in adults the circular part of the wound should be deepened either before or after the urethra is opened. The operation, as a whole, is, he thought, the simplest in conception, the easiest in execution, and the least liable to be attended or followed by any unfavourable complication of all the operations for lithotomy.—*Med. Times and Gaz.*, Nov. 28, 1868.

54. *Treatment of Fractured Clavicle by a Cross-Shaped Splint.*—Mr. G. GREWCOCK, of Nottingham, describes (*Brit. Med. Journal*, Nov. 7, 1868) the following plan of treatment of fractured clavicle, which, though not entirely new, he claims to be very effectual:—

"A simple cross-shaped splint fulfils perfectly all the three indications of the accident, without the disadvantages of the figure-of-8 bandage. The manner in which it is applied is extremely simple. The shoulders, having been well brought back, are fastened to the extremities of the splint by means of a bandage passing under the axilla and over the shoulder, thus effectually overcoming the resistance of the thoracic muscles. A small pad is placed in the

axilla, and the bandage, passed over the arm and fastened behind to the splint, keeps the pad to its place.

"I have treated several cases by this method, and found it give greater ease to the patient than the figure-of-8 bandage, and fulfil perfectly all the indications necessary for the successful treatment of the accident."

55. *Fracture of Pubis from Muscular Action.*—A woman, aged 43, engaged in lifting stones weighing more than 150 pounds from the bottom of a boat on to the adjacent quay, while raising one of them, lodged it against the pubis, and then elevated it to the quay, which was thirty or forty centimetres above her, by mustering all her force, and thrusting it up with the aid of the abdominal muscles. She felt a sharp tearing pain in the left groin, but heard no crepitation. She continued her laborious task for the rest of the day, and all next day was wheeling stones in a barrow. Next day, after a long walk, she fell down exhausted, and was brought to the Nantes Hospital. She was treated first for paraplegia, until careful examination detected a crepitation, when she was placed in a surgical ward. On first inspection, M. Letenneur perceived no deformity in the pelvis, nor was there any pain except on moving. The lower limbs were powerless. On carefully examining the body of the left pubis, a projection was found just external to the spine, which formed the internal fragment of the fractured pubis, the external fragment being a little depressed. Pressure here gave pain, and on examination *per vaginam* a slight displacement of the descending ramus could be felt. On the patient turning on the right side, a very audible crepitus was heard, and this she could reproduce at will, although it could not be excited by pressure. A gymnastic girdle was fastened firmly round the pelvis to the great relief of the patient; and in about a month, notwithstanding intervening attacks of erysipelas and diarrhoea, consolidation had become quite complete, a difference of level of not more than half a centimetre existing between the two fragments. Walking had become quite easy.—*Med. Times and Gaz.*, Nov. 28, from *Rev. Méd.*, Sept. 30.

56. *Rupture of Urinary Bladder.*—This accident is so generally fatal that the history of an exceptional recovery is certain to be regarded with no ordinary interest. Dr. Liddell, in an instructive paper on this subject, published in the number of this Journal for April, 1867, page 358, states that out of seventy-eight cases of this grave injury reported by different surgeons, there are but five instances of recovery recorded. Dr. HENLEY THORP reports another successful case (*Dublin Quart. Journ. Med. Sc.*, Nov. 1868), with valuable comments on the symptomatology, diagnosis, and treatment of this accident. The following is a brief summary of his paper:—

J. M'A., while in a state of intoxication, was thrown from his horse, and the bladder ruptured. The diagnosis was exceedingly simple. The position of the patient in the sitting posture, his body bent forward, the spastic rigidity of the abdominal muscles, and the urgent but unavailing efforts to pass water, enabled Dr. T. to predicate the mischief before he introduced the catheter. Then the empty state of the organ, and the mode the bloody urine overflowed the instrument, without impetus, in small quantities at a time, irregularly and interruptedly, uninfluenced by pressure above the pubes, but clearly affected by pushing the instrument backwards, changing its direction, turning it on its axis as also by changing the position of the patient, placed the nature of the case beyond the possibility of a doubt. However, it is not every case of ruptured bladder that presents features so palpable and undisguised as this. One of the most remarkable facts in relation to this lesion is the tolerance occasionally manifested, and the power of locomotion for hours, even days, possessed by some of the sufferers. (*Vide* case reported by Mr. Hind to Med. Soc. of Lond., and Harrison's case, *Dub. Med. Journ.*, vol. ix., July 1st, 1863). Another fact deserves to be specially noticed, as ignorance of it might lead to grievous oversights: a solution of continuity in the bladder does not necessarily incapacitate the viscus from retaining a portion of its contents, and even discharging them through the urethra. In proof of this proposition, the case of Dr. Grueber, of Vienna (*Dub. Hosp. Gaz.*, vol. v. p. 263), is cited.



Of no less practical moment is the advantage of establishing a differential diagnosis between cases of ruptured bladder, with discharge of urine into the peritoneal sac, from those rarer instances in which the organ gives way anteriorly, or where it is uncovered by serous membrane. In one case the irritation caused by a fluid loaded with effete salts, and prone to decomposition sooner or later, excites peritonitis. In the other, the effused urine produces destructive cellulitis, with gangrenous mischief and fever of a typhoid character. The diagnosis can generally be made with unerring decision. The manner in which the urine overflows the catheter without impetus or jet, and the fact of our being able to obtain it in *quantity*, by skilful catheterism, are conclusive proofs of its discharge not from the cavity of the bladder, yet of its being free or unconfined—and, therefore, that it comes from the peritoneal sac. If, on the other hand, having a clear history of the case before us—being certain, in fact, that the bladder had previously contained a quantity of urine—the catheter failed to discharge this fluid, or only gave exit to a *small quantity on its first introduction*, there are then good grounds for concluding that the urine was not free, but confined in the cells of the areolar tissue, and consequently unable to return into the bladder through the laceration—in short, that the rupture had taken place through the anterior portion of the viscus.

The treatment in Dr. T.'s case consisted in the introduction and retention of a full-sized gum-elastic catheter, for the purpose of draining off the urine. A few hours later, the stopcock of a half-pint elastic bag was adjusted to the catheter, which was then passed through the rent in the bladder, and tepid water to the amount of three bagfuls, injected through the instrument. Each portion when introduced was retained for a couple of minutes, and then allowed to return through the catheter, so that not more than eight ounces were injected at a time into the abdominal cavity. At first the water returned of a reddish tinge, but the last half pint was clear and bloodless. Each bagful regurgitated in a slow and interrupted manner, and pressure had no influence in accelerating or otherwise altering the mode of its discharge. During these proceedings, which occupied about twenty minutes, the patient was caused frequently to change his position, so as to mix the injected fluid as much as possible with whatever urine remained in the peritoneal sac. As soon as the abdomen was emptied as far as practicable, the patient was again placed upon his back, with the pelvis well depressed, and the catheter withdrawn partially, that is to say, until its extremity only projected into the bladder; and when the urine commenced to drop away, the instrument was securely fixed with a jugum.

Dr. T. believes that although on the eighth day there may exist a tolerably perfect union of the lacerated surfaces, nevertheless, the bladder ought not to be permitted to empty itself by its own unaided efforts before the expiration of a fortnight. During the greater portion of the time the patient should be kept on his back with his shoulders well elevated.

With reference to general treatment Dr. T. recommends the warm hip-bath, relays of leeches for several days, opium in full doses, frequently repeated—calomel in small doses combined with it, until the mouth becomes affected—hot stupes and bran poultices over the abdomen.

57. *Changes in the Nervous System which follow the Amputation of Limbs.*—Dr. W. H. DICKINSON publishes (*Journ. Anat. and Phys.*, Nov. 1868) some investigations he has made relative to the changes which occur in the nervous system after amputation of the limbs. He expected to find that the portion of the encephalon which regulated the movements of each limb would be declared by a localized atrophy consequent on its removal. He failed, however, to discover any such lesion or any change of structure either in the cerebellum or great ganglia of the cerebrum. He next sought to trace evidence of change by commencing at the stump and working upwards. Three cases are related in which he made careful examinations of the subjects.

"Placing together," he says, "the several observations, it appears that when a limb has been absent, as the result of operation, for twenty or more years, the following changes have been found in the nervous system.

"First, atrophy of the nerves of the stump, of which a large proportion of the fibres have perished, notwithstanding that, supported by the fibrous tissue which enters into their structure, they retain their bulk and external appearance almost without alteration.

"Secondly, wasting of the nerve-roots, especially the posterior. The wasting of the tubes, in the absence of such fibrous investiture as belongs to the mixed nerves, produces an attenuation, which in the case of the posterior root is very conspicuous.

"Thirdly, a slight loss of bulk in the gray matter of the cord, on the side of the lost member, near the origin of its nerves, without any intimate change discernible by the microscope.

"Lastly, a remarkable shrinking of the posterior column of the cord on the side of the mutilation, attended by a condensation of areolar tissue. The atrophy extends upwards, and in the case of the loss of an arm can be traced into the medulla oblongata as far as the upper limit of the decussation of the pyramids.

"The cerebrum and cerebellum remain unchanged.

"I am aware that many details relating to this subject remain to be worked out, and I should have waited for further opportunities had not my purpose been forestalled by M. Vulpian, who has, since these observations were made, published two similar cases.

"His results differ very materially from mine. Both the cases he reports were of amputation of the leg, a little distance above the ankle. In one case the leg had been removed for 47 years, in the other for 20 years. In both cases M. Vulpian describes the spinal cord as slightly lessened in bulk on the side of the amputation. This diminution affected the gray matter generally, the white matter *with the exception of the posterior column*.

"The cells of gray matter were not altered in character, or appreciably in number. In one of the cases some spots of disintegration were supposed to exist in the gray horn. No changes were detected in the nerves or nerve-roots.

"My results differ from those of M. Vulpian in the atrophy of the nerves, posterior nerve-roots, and posterior columns of the cord, which were found in my cases but not in his. His cases and mine coincide in attributing a slight loss of bulk to the gray matter on the side of the mutilation.

"Dr. Waller long ago pointed out that nerves separated from their centres rapidly became atrophied. With regard to the spinal roots in particular he found that when an anterior root was cut the part retaining its connection with the cord remained unaltered, while the outer extremity wasted. After dividing a posterior root the reverse took place; the central end wasted, the peripheral end retained its structure. From these and other experiments, Dr. Waller was led to conclude that the outer portion of the severed posterior root owed its retention of structure to the ganglion to which it was attached, while the nutrition of the motor root depended on the cord.

"The facts brought forward in this paper appear to show that these conclusions need modification. It would seem that the posterior root may waste though still in connection with the ganglion, the anterior though still in connection with the cord. The ganglion therefore is not the sole controller of the nutrition of one root, or the cord of the other. It appears that long disuse of a nerve is sufficient to lead to its atrophy notwithstanding that those nervous structures which more immediately regulate its nutrition are complete.

"There are some points which as yet may be left without explanation, namely the greater atrophy of the sensory than of the motor roots, and the peculiar wasting of the posterior columns, passing vertically up the cord, and in the case of loss of the arm affecting the medulla, a course not corresponding with that of the sensory fibres, which soon lose themselves in the gray matter."

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58. *Recent Experience in Ovariectomy*.—T. SPENCER WELLS, Esq., states (*Lond. Med. Times and Gaz.*, Nov. 28, 1868) that since last October he has completed the operation of ovariectomy at the Samaritan Hospital, "in thirty-six cases, besides one case in which I performed the operation successfully for the second time on the same patient. Of the thirty-six women, thirty-one

recovered and five died. And it is a remarkable fact that in *every* case in which the pedicle was long enough to enable me to use the clamp, the patient recovered. There were thirty of these cases—thirty clamp cases in one year without a single death. In two cases I used the cautery. One of the patients recovered and one died. In four cases I tied the pedicle, and returned it into the cavity of the abdomen after cutting off the ends of the ligature. All these four patients died. Two of them must have died, I think, in whatever manner the pedicle had been treated. They were almost hopeless cases, and the operation was done as a forlorn hope. In one case the patient was sinking fast from septicæmia, a cyst filled with fetid fluid and poisonous gas having been washed out repeatedly, but ineffectually, with carbolic acid, and it was at last removed with only the very faintest hope of saving life. In the other case, extensive pelvic adhesions and disease of both ovaries had been pretty accurately made out, and had led to repeated tappings rather than ovariectomy. But at length, when tappings became of no avail, the cysts were removed, with some slight hope but with far greater apprehension. A clamp could not be used in either case. The pedicles were too short. The cautery might have been used; but the pedicles were of the kind where the cautery is often ineffectual in stopping bleeding—broad, thin, membranous attachments, with large vessels. In such cases the ligature succeeds well in stopping bleeding; but whether the ends are left hanging out through the opening in the abdominal wall, or are cut off short and returned with the pedicle, the results in my hands have been almost equally unsatisfactory. Other operators have been much more satisfied with the ligature than I have been, and every one must be guided very much by his own experience. But when I look back over the work of the past year in this hospital, where all the patients have been treated in all other circumstances under similar conditions, and find no single death in thirty clamp cases, but every one a recovery, while of six cases treated otherwise five die, you will hardly wonder that I use the clamp whenever I can, especially as very similar results have been obtained in private practice. It is true, as I have just said, that two of these five deaths would probably have happened even if I had been able to use a clamp. But three of the deaths I attribute principally, or entirely, to the fact that, as I was unable to secure the pedicle outside the peritoneal cavity, I was driven against my will to the cautery or the ligature. Twice I used the cautery. In one it stopped all bleeding, and the patient recovered. In another it only stopped the smaller vessels, the larger having to be tied, and this patient died; so that her death might be added to that of the four who died after the return of the tied pedicle. Or if, as I think it is fair to do, we put aside (so far as the treatment of the pedicle is concerned) the two cases which probably must have died however the pedicle had been treated, we have three cases where death followed the use of the ligature; and, so far as I can judge from observation of similar cases, these three patients would probably have recovered if the pedicles had been long enough for a clamp to have been applied and fixed outside the peritoneal cavity."

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## OPHTHALMOLOGY.

59. *Means by which the Eye is enabled to adjust itself for Vision at Different Distances.*—The *Journal of Anatomy and Physiology* (Nov. 1868) contains an account of some very interesting investigations by R. J. LEE, M. B., Cantab., on the structure and function of the ciliary muscle. He has studied the anatomy of this muscle in birds, fish, and reptiles. It would be impossible without the numerous figures with which his description of this structure is illustrated, to make it intelligible to our readers, we must therefore be content with giving his conclusions.

The result of the numerous dissections which he has made leads him to consider that the various theories which have been advanced to explain the means

by which the eye is enabled to adjust itself for distance, are inconsistent with the anatomy of the organ, and expresses the belief, which can scarcely be considered novel, that this phenomenon will be found to be "explicable by the simple law of optical science which requires nothing more than a change in the relative position of the lens and retina to accommodate the sight to near and distant objects."

Coccius (*Der Mechanismus der Accommodation des menschlichen Auges nach Beobachtungen im Leben*. 8vo. pp. 153. Leipsic, 1868) has made a number of observations on the mechanism of accommodation in the human eye by examining during life the eyes of those who had iridectomy performed upon them. He observed that when the accommodation of the eye is altered from that for a distant to that for a near object, the ciliary processes advance and become somewhat larger; the zonule becomes broader; and the dark band which represents the border of the lens becomes broader and darker. Atropia occasions a decided retraction, Calabar bean, a decided advance of the ciliary processes. He thinks that the cause of these changes can only be found in the action of the ciliary muscle. He thinks that the ciliary muscle cannot have a fixed point anywhere but anteriorly near the canal of Schlemm, else the ciliary processes could not be drawn forward. He thinks that the lateral swelling of these is due to compression of their veins by the contracting muscle. The increased curvature of the lens during positive accommodation (accommodation for near objects) is, according to him, not only due to the traction exercised by the ciliary muscle, but also to pressure.

Helmholtz's theory is that during negative accommodation the lens is kept flat by the elasticity of the zonule, and that during positive accommodation the ciliary muscle counteracts the action of the zonule, and the lens becomes more convex by the action of its own elasticity. In opposition to this, Coccius adduces the fact that the transition from accommodation for distant to that for near objects, takes place more rapidly than the inverse movement does. He thinks that this fact does not favour the idea that the elasticity of the zonule is greater than that of the lens, but that the lens returns to its somewhat flattened form during negative accommodation by reason of its own elasticity. (From an abstract in the *Centralblatt*, Nos. 31 and 32, 1868.)

On the other hand, Hensen and Völckers (*Experimentale untersuchung über den Mechanismus der Accommodation*. 8vo. pp. 56. Kiel, 1868), from numerous experiments on the eyes of dogs and pigs, support Helmholtz's theory of accommodation.—*Journ. Anat. and Phys.*, Nov. 1868.

60. *Sympathetic Ophthalmia and its Treatment by Division of the Ciliary Nerves*.—By. DR. ED. MEYER.—On investigating the numerous published cases of this affection, it appears that in more than one-half of the cases the wounded eye contained a foreign body: of the other half, two-thirds were cases of penetrating wounds; and one-third, of simple contusion. It is comparatively rare to see this affection follow an operation. One also sees this affection where an atrophic globe is the seat of recurrent inflammations, or of calcareous degeneration giving rise to irritation. It seldom occurs in children, generally in persons of feeble constitution, and often after prolonged exercise of the healthy eye.

Two hypotheses have been advanced to explain the propagation of diseased action from the one eye to the other. The one attributes it to the optic nerve and its decussation with its neighbour, the other to the ciliary nerves. The author is inclined to accept both hypotheses, but considers the latter to be the more frequent.

He considers three forms of sympathetic ophthalmia. The most dangerous form is known as malignant iritis or irido-cyclitis. The symptoms appear some days, weeks, sometimes months, after the injury, and are those of iritis with rapid effusion of lymph gluing the margin of the iris to the capsule of the lens. The iris becomes bulged forwards in its centre towards the inner surface of the cornea; there is great tenderness on pressure over the ciliary region.

the tension of the eye becomes diminished, and vision impaired, leading to complete blindness.

The treatment consists in the early enucleation of the injured eye. Iridectomy does not appear to be of any service.

The second form of sympathetic ophthalmia is the ordinary serous iritis (aqueousulitis). This form, though very obstinate, does not appear to lead to irido-cyclitis; the vitreous humour generally remains intact, and it is in this form that the enucleation of the injured eye is attended with the best results.

The third form, and the mildest, is that to which the term sympathetic neuroses has been well applied. It is characterized, above all, by considerable photophobia with consecutive spasm of the orbicularis, lachrymation, slight circum-corneal injection manifested upon the slightest visual effort, feebleness of vision and deficient power of accommodation. A typical case of this form is narrated in which the patient, being of excessively nervous temperament and worn-out by suffering, declined to submit to enucleation, and where Dr. Meyer had recourse to an operation—suggested by Von Graefe, but not previously employed either by him or others—viz., division of the ciliary nerves, with the best results; the photophobia and irritability ceased entirely, and visual power returned. In this case the primary lesion was an iridectomy, in the performance of which a portion of iris remained impacted between the lips of the wound in the ciliary region; this gave rise to ciliary irritation, leading to sympathetic neuroses. In two other cases he has employed this operation with the best effect. In the one case, a burn from lime was the original injury; in the other, a wound with scissors, involving the cornea, iris, and ciliary region. After the operation, tenderness in the ciliary region completely disappeared.

The following is the method of operating: Having found the region tender to the touch, a fold of conjunctiva is pinched up at the corresponding margin of the cornea, and incised (as for the operation of strabismus), and the cellular tissue uniting the conjunctiva divided to the extent and in the direction required by the plan of operation. A strabismus hook is then passed under the tendon of the nearest muscle so as to fix the eye. The hook being held in the left hand, a puncture is made through the sclerotic in the ciliary region obliquely to the surface, with Von Graefe's narrow knife, in the same manner as for extraction. Counter-puncture is effected, and the section completed, whereby a linear incision is obtained parallel to the margin of the cornea, at which vitreous humour at once presents itself. The hook is carefully removed, and the lips of the conjunctival wound brought together by a suture. Several days elapse ere the wound in the sclerotic heals. Little reaction follows the operation, and no further treatment is required than rest, subcutaneous injection of morphia into the temple, and, where there is pain and restlessness, the application of a pressure bandage.

Of the three eyes operated on, one, which had commenced to shrink before the operation, is completely atrophied since; the other two have preserved their normal shape.—*Edin. Med. Journ.*, Nov. 1868, from *Annales d'Oculistique*, tome lviii.

61. *Sympathetic Ophthalmia cured by Neurotomy.*—Sympathetic ophthalmia is undoubtedly one of the most dangerous forms of inflammation of the eye, and it has been considered that but one desperate remedy existed to check it, namely, the removal of the primarily injured eyeball—an operation Mr. J. Z. LAURENCE designates (*Lancet*, Nov. 14, 1868) as “severe, bloody, and disfiguring to the patient—an operation only admissible from the known funest consequences to the sympathetically affected eye if we allowed the injured one to remain.

“After it was established that sympathetic ophthalmia consisted in propagated *cyclitis*, Dr. E. Meyer, of Paris [see preceding article], on a suggestion of Professor von Graefe, in three cases succeeded in curing the sympathetic ophthalmia by *dividing the ciliary nerves* of the primarily affected eye. He has been followed by Professor Secondi, of Genoa; and now I have the honour to lay before the profession a fifth successful case.

“T. S—, aged twenty, was admitted into St. Bartholomew's Hospital.

Chatham, under my care, on June 20th. Twelve years previously a piece of steel had struck his left eye. He had still perception of light; scleritis and cyclitis were present. By means of a probe, it was found that the most tender part of the ciliary region was situated downwards and outwards. The tension of the globe was normal. He complained of great intolerance of light in the uninjured eye—the right one; as soon as he fixed this upon any object, pain and watering ensued, so that the eye was practically useless to him for any near occupation; but for distant objects his vision was found to be perfect ( $S=1$ ). On the 22d I made an incision of about half an inch along the tender part of the ciliary region of the primarily injured eye; a little vitreous escaped.

“Aug. 3d.—Left the hospital perfectly cured. He could now read for hours together with comfort with his left eye, and all traces of the trifling operation on his right eye were gone.

“On October 24th a letter was received from the patient, stating that he could ‘read for five or six hours at a time without any pain whatever;’ that he is engaged in ‘steel-turning, which is very trying to the eyes, but is happy to say it does not affect him but very little.’ The eyes do not water. He finds working by gaslight painful, but daylight does not affect the (right) eye in the least. He finds objects appear to him ‘closer than they really are.’”

62. *Amaurosis from Neuralgia of Dental Nerves*.—In Zehender's *Klin. Monatsbl. f. Augenheilk.* 1868, Dr. ALEXANDER describes a case in which for five weeks the patient had experienced a constantly increasing defect of vision in both eyes, without any change in the appearance of the organs excepting some symptoms of hyperemia of the pupil, which the ordinary antiphlogistic treatment failed to remove. The patient suffered from neuralgia of the dental nerves connected with carious teeth; upon the extraction of the latter the dental suffering ceased, and soon afterwards the loss of vision was removed; at first on the side corresponding with that from which the decayed teeth were extracted, but after the lapse of a few days the sight of both eyes became fully restored.—*Centralblatt f. d. Medicinisch. Wissenschaften*, June, 1868. D. F. C.

63. *Microscopic Structure of the Lens in Man and in Vertebrata*.—Dr. ZERNOFF, of Moscow, from numerous experiments and researches of his own, arrives at the following conclusions on this subject.

“1. In the lens of man and all vertebrata, the epithelium of the anterior capsule is directly connected with the lens-fibres.

“2. It is most probable that the growth of the lens (in youth) depends upon the new formation of fibres out of the cells of the epithelium.

“3. The nuclei described by Ritter as present in the small central fibres of the frog's lens are also present in other considerably longer, more external fibres, and are readily distinguishable by their form from the nuclei of the peripheral fibres.

“4. The amorphous mass described by some as present in the kernel of the lens does not exist.

“5. The tubes between the lens-fibres described by Von Becker, and the amorphous matter with which they are filled, are artificial productions. It is not necessary to presuppose a displacement of fluid (in the lens) in order to explain the act of accommodation, such as Von Becker describes, as the altered form of the lens may be caused by the elasticity of its fibres.

“6. The lens of adult birds differs from that of other adult vertebrata, not only in the peculiar arrangement of the fibres at the periphery, but also in possessing a ring of amorphous substance situated betwixt the capsule and the fibres, a little behind the equator.”—*Edin. Med. Journ.*, Nov. 1868, from *Archiv für Ophth.*, band xiii. abth. 2.

64. *An Improved Method of Extracting in Cases of Cataract*.—In our number for July, 1867, will be found a brief account of Dr. CHARLES TAYLOR's method of extracting cataract. In a paper read before the British Medical Association at its late meeting, he presented some further observations on the subject, and gives the results of his more extended experience. In his method

of extracting. Dr. T. employs, he states, "two small knives about a line in breadth and bent at an angle like the ordinary iridectomy knives, one sharp and the other with a blunt or bulbous extremity. The patient is anæsthetized and the lids separated with the stop-speculum, the sharp knife is then entered at the summit of the cornea, and an incision from two to three lines in extent completed; the lens may be extracted either with an iridectomy with a mere slit in the constrictor fibres of the iris, or, if circumstances are very favourable, the iris may be left intact. The previously dilated pupil will to considerable extent maintain this condition with the small incision until the capsule is opened. Owing to the small size of the opening, also, the globe may be manipulated to any extent, and the capsule rendered tense without danger; when the cataract is loosened, the wound should be enlarged with the blunt-pointed secondary knife to either side, the eye being fixed first with one hand and then with the other; a shallow flap is thus formed through which the lens may be extruded without introducing any instrument into the eye. Owing to the precision with which the wound may be localized, a smaller flap suffices for removal of the lens than is required in the old flap method, even if the iris is left intact; but if a portion is removed, a shallow elongated flap is formed, situated well back in dense tissue, with sloping sides and transverse centre, which last occupies the summit of the true cornea; such a flap is sufficiently elastic to close without any artificial appositions or external support, strong enough to resist protrusion by advancing vitreous, and too resilient to permit of accidental reflection. When the lens is fixed by adhesions, or the hyaloid is ruptured, the author uses his wire or skeleton spoon, a mere loop of flattened wire of extreme tensility, which assists the exit of the lens without adding to its bulk: if the lens is tilted over, this may be used without dipping it into the vitreous cavity, even when the iris is left untouched. Closure of the eye with a wet pad, and two days' confinement to the couch in a partially darkened room is all the after-treatment required, and, as a rule, the patients return home in a week with restored vision. The advantages claimed for this method are—that the right hand may be used for either eye, so that ambidexterity is not necessary on the part of the operator, nor is there risk of that increased failure which, from the greater difficulties of extraction, has hitherto attended operations upon the left eye. That up to the last moment, indeed until success is almost certain, the operator is not committed to any special form of operation, but may extract either with or without iridectomy, or may defer the operation until after removal of a portion of the iris, utilizing the experience of the individual thus gained, to the evident advantage of both patient and operator when extracting some weeks later. Numerous other advantages are claimed from the facility of execution, the ease with which accidents are met, and the small size of the wound, the greater safety and certainty of success, and the slight after-treatment required. The author reports ninety cases operated on in succession, without selection, and including many persons over eighty years of age, and others suffering from various forms of senile marasmus, decrepitude, and disease, in which three eyes only were lost from suppuration of the flap.—*Med. Times and Gaz.*, Aug. 15, 1868.

65. *The State of the Optic Nerves and Retinae as seen in the Insane*—Dr. T. CLIFFORD ALLEBUTT communicated to the Royal Medical and Chirurgical Society, February 25th, a paper on this subject. The author stated that he was first led to examine the eye by the ophthalmoscope in that form of insanity known as general paralysis. He did so in the chance of finding disease in the vessels of the retina resembling that which is described as existing in the bloodvessels of the brain in that disease. This was not the case; but another change—viz., atrophy of the optic nerve—was constantly found. Having thus commenced optic researches among the insane, the author was led to continue them. The considerable proportion of cases in which he found changes more or less great, led him also to think his observations worth publishing. He hoped that by means of the ophthalmoscope one more effort would be made finally to establish the study of insanity upon a positive basis. A lunatic asylum is, in fact, a museum of cerebral diseases; and the direct observation of an offshoot of the

brain like the optic nervous apparatus may, in such cases, be most valuable. It may serve not only as a means of decision between "structural" and "functional" disorder, but may also serve as an interpreter of the modes both of structural and of functional changes. For many reasons the author preferred to schedule his cases in accordance with a classification of mental disease rather than according to the supposed origin or nature of lesions. The cases were taken chiefly from those in the West Riding Asylum at Wakefield; some also were taken from the North and East Riding Asylum at Clifton, near York. The author expressed his warm thanks to Dr. Crichton Browne, of the Wakefield Asylum, and also to Dr. Christie, of the York Asylum, for their kind interest and aid in his observations. In all two hundred and fourteen cases were examined. Of those from the two asylums, Dr. Browne and Dr. Christie have furnished the brief diagnostic remarks which are placed upon the schedules. (a) *General Paralysis*: Dr. Allbutt examined fifty-three cases. In forty-one of these cases distinct disease of the optic nerve was found, seven are marked as doubtful, and five were normal. He drew the following conclusions from his schedules: 1. That atrophy of the optic disk takes place in nearly every case of general paralysis, and is commonly accompanied by atrophy of the olfactory nerves. 2. That it is not to be distinctly seen until the end of the first stage, as it slowly travels down from the optic centres. 3. That it begins as a pink suffusion of the nerve, without much stasis or exudation, and ends as simple white atrophy. The author likened this process to the so-called "red-and-white softening" in the brain. 4. That the atrophy of the nerve is not in constant proportion to the ataxy of the muscles of the orbit. 5. That it is in relation with the state of the pupil, which is contracted during the early stages, and dilated in the fully atrophic stage. 6. That as the symptom is not a very early one, it probably has not much diagnostic value; its pathological significance is probably considerable. (b) *Mania*: Of this disease the author brought forward fifty-one cases. In twenty-five cases symptomatic changes were found with the ophthalmoscope; thirteen cases were noted as doubtful; and thirteen were either healthy, or presented non-symptomatic lesions, such as glaucoma, etc. He made the following propositions: 1. That the ophthalmoscope reveals symptomatic changes in a large number of cases of mania. 2. That these are most common where other symptoms of organic disease exist, and seem not unfrequently to depend upon meningitis. 3. That, after a paroxysm of mania, there remains a paralysis of the bloodvessels in and about the disks, causing obvious hyperæmia. 4. That during the paroxysm there is, perhaps, a spasm of these vessels, as suggested by one case. 5. That the permanent changes are those of stasis, of consecutive atrophy, of simple atrophy, or of a mixed character. (c) *Dementia*: Out of thirty-eight cases, the author found marked disease of the optic nerves or retina in twenty-three, he recorded six as doubtful, and nine were healthy. Many of these cases were known to depend upon organic disease, and, like those of mania, were chosen for their severity. In simple acute dementia, however profound, if independent of organic disease, the author thinks no optic changes take place. (d, e) *Melancholia* and *Monomania* were tabled together for convenience. Of seventeen cases, in three only was found disease of the eye. Few of these cases depend upon organic disease. Anæmia of the retina was commonly found, however, in melancholia. (f) *Insanity depending upon Epilepsy*: Forty-three cases were noted. In fifteen, disease of the optic nerve or retina was found, nine were doubtful, and nineteen showed no change. Simple epilepsy is not commonly followed by disease of the optic nerve. In most of the cases presenting optic changes, organic disease was known to exist from the other symptoms. (g) *Idiocy*: The author had previously noticed amaurosis in idiots. He examined, therefore, twelve cases; and he found marked atrophy of the disks in the large proportion of five, one was changing, and two were noted as doubtful. He asked whether this atrophy would be found to depend upon encephalic inflammations in infancy.

Dr. TUKE remarked that it would seem ungracious to cast any doubts on such a paper. Still, he thought that certain things should not be overlooked. To take the case of general paralysis, that ordinarily occurred in men over forty, when the sight was beginning to fail, and atrophy likely to be encountered. So,



again, the state of the pupil spoken of had really nothing to do with the state of the retina. There was a question as to its bearing on mania; if the mania were acute, then probably there might be congestion; if chronic, the appearances would vary with age and other circumstances. Still, this was the right course of investigation to pursue.—*Med. Times and Gaz.*, March 21, 1868.

### MIDWIFERY.

66. *Injections of Morphia in the Pains and After-pains of Labour.*—Dr. ERNEST KORMANN read a paper, on this subject, before the *Gesellschaft für Geburtshülfe*, at Leipzig, which gives very interesting results as obtained by this treatment. The author does not in the least hesitate to inject morphia for the relief of labour-pains, when they are severe, especially in primipare, and also in those subjects who have contracted pelvis. He employs a solution of the sulphate of morphia, three grains to the drachm; it does not require any acidulation to keep the salt dissolved. He gives from one to three injections during the course of a labour; usually only one, however. The doses employed range from about  $\frac{1}{4}$  to  $\frac{3}{8}$  grain, and he has never had reason to think they did harm. They do not appear to interfere with the steady progress of the labour, though they often reduce the frequency of uterine contractions, when these have been what English people call “niggling.” He thinks that they may be used either during the dilating or the expulsive stage of the labour; the former process they often actively aid. It is a remarkable though intelligible fact, that patients who have been injected during labour seldom have *after-pains*; but when the latter have occurred, injection is a most useful and valuable agent in procuring that repose which is so necessary to restore the woman's strength after the fatigues of parturition. The locality which Kormann selects for injection is always the thigh. Besides the above general uses of the injection in parturient women, painful complications, and especially *cramps* of the muscles of the extremities, may be most effectively treated by this method.—*The Practitioner*, Nov. 1868.

67. *Diagnosis of Partial Rupture of the Uterus.*—C. HECKER in the *Monatsschr. f. Geburtskunde*, remarks that the partial rupture of the substance of the womb without implicating the peritoneal coat is an accident scarcely less serious than when the rupture is complete, but unattended by the alarming symptoms which mark the occurrence of the latter. In general an unexpected fall in the size, with increase in frequency of the pulse is perhaps the most decisive indication of the occurrence of partial rupture of the uterine walls. Among the local symptoms Dr. Hecker enumerates one nevertheless as of a very negative character, the sudden occurrence of an hæmatocele situated between the walls of the uterus and peritoneum. Dr. H. met with this in two cases. In the first the partial rupture was caused by the presence of a hydrocephalic fœtus; in the second it was the result of medullary carcinoma of the posterior lip of the os uteri. In both cases during labour, the upper wall of the vagina was found to be pressed downwards by a soft elastic tumour. In the first of these cases no examination of the body after death was permitted; but in the second the swelling in the vagina was found to result from an effusion of blood beneath the peritoneum.—*Centralblatt f. d. Medicinisch. Wissenschaften*, Sept. 1868. D. F. C.

### MEDICAL JURISPRUDENCE AND TOXICOLOGY.

68. *Case of Poisoning from Atropia.*—HÖRING, in the *Wurtemb. Med. Corr. Blt.*, 1868, relates the case of a child three and a half years old, that swallowed a solution of one gr. atropia in three drachms of water. Vomiting occurred, and

very promptly symptoms of poisoning. A subcutaneous injection of one-eighth of a grain of morphia was promptly practised. Very soon a decided improvement in the condition of the child took place. The pulse fell at once from 160 to 120; the respirations from between 30-32 to 28. By the end of forty-five minutes consciousness and speech had returned. In a few hours the child was fully restored, with the exception of some dilatation of the pupils, which continued a few days longer.—*Centralblatt f. d. Medicinisch. Wissenschaften*, Oct. 1868. D. F. C.

69. *Poisonous Effects caused by Eating Black Pudding.*—In the *Deutsches Arch. f. Klin. Med.* (Leipzig, Oct. 1868). A. KUSSMAUL describes what he styles an epidemic, produced by using as food a kind of haggis composed of the flesh of the cow and of the hog, with spices, etc., which occurred in a Bavarian village (Lahr), and its environs, during the month of August, 1868. More than seventy individuals, all of whom had eaten of the food just mentioned, were attacked with a similar form of sickness, while all those who had not tasted the food, even though they had in some instances partaken of a portion of the very same flesh as that from which the puddings had been made were entirely unaffected. The symptoms which occurred in those who had eaten of the pudding, set in within twenty-four hours after it had been taken. There were nausea and vomiting, pain in the stomach, diarrhœa, fever, thirst, headache, vertigo, watchfulness, and great debility. To these symptoms in some cases, there were added pain of the limbs, dryness of the mouth, and a sense of irritation within the throat. In slight cases these symptoms gradually disappeared within fourteen days; in the more severe cases there came on deafness, delirium, convulsions, and other symptoms of cerebral disease, the case then simulating one of typhus fever. To these symptoms were soon added dilatation of the pupils, great diminution in the secretion of urine, often attended with painful micturition, and in some cases with cramp of the legs. In the more severe cases convalescence occurred at the termination of the third or fourth week. Four of the patients died: a boy two years old forty-eight hours after he had partaken of the haggis; and three grown persons, on respectively the ninth, twelfth, and fourteenth days after having eaten of it. In two cases in which a post-mortem examination was made, the only evidence of disease presented was catarrh of the intestinal mucous membrane, attended with small erosions. In one of the cases there was also enlargement of the mesenteric glands with a grayish-white infiltration; in the other case slight intumescence of the liver was noted. From the foregoing description it will be seen that the disease in question could not have been typhus fever—there was an absence, throughout its course, of exanthemata, of enlargement of the spleen, etc.; neither can the symptoms be referred to the presence of trichinæ, no appearance of their presence was detected after the most careful examination, in the food eaten by the patients: neither was any inorganic poison discoverable in it, nor had it undergone in the slightest extent any putrefactive change. Besides this, in none of those who had eaten portions of the flesh from the same animals which furnished materials for the confection of the poisonous food, were any bad effects observed. The supposition that the spices used in the composition of the haggis were the media through which something destructive of health had been introduced is extremely improbable. We must, therefore, conclude that a deleterious principle, similar to that of certain forms of poisonous sausage-meat, had become developed subsequently to the confection of the food partaken of by the inhabitants of the village of Lahr, in Bavaria. D. F. C.

## AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*On the Permanent Preservation of Histological Preparations as Practised at the Army Medical Museum, Washington, D. C.* By Brevet Lt.-Col. J. J. WOODWARD, Asst. Surgeon U. S. Army (Contributed by permission of the Surgeon General.)

All microscopists who have busied themselves with the minute anatomy of the soft tissues of the higher animals must have felt the need of an easy and reliable process by which satisfactory preparations once obtained may be permanently preserved. The various aqueous solutions, such, for example, as those proposed by Goadby, have been thoroughly tried, but have failed to preserve the tissues permanently, and thousands of preparations laboriously put up in this country and Great Britain have perished, most of them proving serviceable for but a very few months. On the other hand, alcoholic solutions of various strength not merely render the tissue opaque, but since they attack almost any cement, are soon lost by evaporation, or the specimens are preserved only at the expense of continual repairs. Much greater advantages are possessed by glycerin, which has recently been extensively used, and in which preparations keep pretty well for several months, but sooner or later, often unfortunately very soon, a peculiar granular change begins in soft tissues thus preserved, which obscures minute details, and ultimately renders the specimens useless. It is true that occasionally among these perishing glycerin preparations one holds out for a longer period; but this, if possible, increases the mortification experienced, by leading the microscopist continually to indulge in hopes which are so seldom realized.

These considerations lead the writer to believe that a few remarks on the methods of preservation found most available at the Army Medical Museum will be acceptable to microscopists.

By far the most satisfactory method of preserving specimens of most of the soft tissues is to mount them in Canada balsam, which can be effected in the majority of instances without materially changing their appearance. Where this cannot be done, however, the mixture of gum and glycerin proposed by Mr. R. J. Farrants, offers an excellent substitute; the great majority of preparations thus put up remaining unaltered for years. A few remarks may be offered on each of these methods.

1. *Farrant's gum and glycerin.*—The original formula for this mixture was as follows:—

“Boil together in a Florence flask or porcelain capsule three grains of arsenious acid and two fluidounces of distilled water: when cold filter through paper. Take of this arsenical solution one ounce, of pure glycerin one ounce, of pure gum acacia one ounce. The gum should be dissolved without heat; a fortnight or longer will be required for complete solution; in the mean time the mix-

<sup>1</sup> Quarterly Journal of Microscopical Science, vol. vi., 1858, p. 119.

ture should be occasionally stirred with a glass rod. It will be well not to shake the bottle so as to froth the mixture, for air introduced is retained with great tenacity, and many days elapse before it entirely disappears. If due care be taken in selecting pieces of gum, transparent, bright, and free from impurities, the mixture will not need filtering; if, however, foreign matters have accidentally gained admission, the best substance through which to strain the mixture is fine cambric, through which a considerable quantity of clean water has been made to flow, so as to wash away any dust or loose fibres of the fabric which might find their way into the mixture."

In this mixture a large number of delicate anatomical preparations, especially perpendicular sections of ulcerated intestines, were mounted at the Army Medical Museum, between 1862 and 1865. All these preparations remain at the present time unaltered except that the colour of the red staining of those stained by imbibition with red aniline, has greatly faded and in some instances altogether disappeared, a circumstance which is the more to be regretted because of the original beauty of the preparations, and because of the facility with which the staining fluid is used. On the other hand, those stained with yellow aniline and with carmine have not changed nor have those injected with carmine. This successful preservation is in striking contrast with the fate of those specimens mounted at the Museum in pure Price's glycerin during the same period. All these have become more or less granular, and most of them have quite spoiled.

The preparations above referred to were finished with a circle of black varnish which was the more necessary as the proportion of glycerin in Farrant's formula is too great to permit the mixture to harden thoroughly. For this reason preference has been given lately to the modification of Farrant's original formula contained in Beale's *How to Work with the Microscope*,<sup>1</sup> which is as follows:—

Picked gum arabic and distilled water each four ounces by weight, glycerin two ounces by weight. These ingredients are to be mixed as in the original formula of Farrant, and pieces of camphor are to be laid in the stoppered bottle in which the mixture is kept. This form of gum and glycerin hardens so thoroughly in a few days that the varnish may be dispensed with, by which much time is saved when many preparations are to be put up. Dr. E. Curtis has modified the method of preparation somewhat by using a larger quantity of distilled water to dissolve the gum, and subsequently restoring the mixture to the required bulk by careful evaporation over a water-bath. The advantage of this method is that it materially shortens the time of preparation.

In mounting the soft tissues in this mixture the preparation once satisfactorily obtained in glycerin, by Beale's method, or by any other selected mode, is simply transferred by the aid of a needle and forceps to a drop of the gum and glycerin on a glass slide, and a suitable thin cover gently pressed upon it. The mixture hardens in a few days, and no varnish is necessary.

2. *Canada balsam for the preservation of the soft tissues.*—It is not necessary to say anything here in praise of Canada balsam as a means of preserving those objects whose structure remains satisfactorily visible after immersion in it. Such preparations are well known to remain unchanged for an indefinite length of time. The earlier histologists, however, were not able to mount the soft tissues satisfactorily in balsam because this substance will not mix with water, and the soft tissues when robbed of their

<sup>1</sup> Fourth edition, p. 58.

moisture by drying are usually much changed, often so much so as not to be recognizable.

When at a later period, balsam was employed for the preservation of transparent injections, the charge was justly brought against it that as then used nothing but the course of the vessels was shown, and that none of the minutest details of structure were to be seen.

If, however, the water of the tissues be gradually replaced by alcohol, these changes do not occur, and the opacity produced by the alcohol is wholly removed when the specimen is subsequently transferred to turpentine preparatory to its immersion in Canada balsam. The method found most generally useful at the Army Medical Museum closely approximates that recommended by Thiersch in his work on epithelial cancer,<sup>1</sup> differing from it, however, in two particulars to which I am disposed to attach importance.

Thiersch hardened the morbid growth by immersing it as soon as possible after the operation or post mortem, in 85 percent. alcohol, which was renewed after twenty-four hours, and replaced after twenty-four hours more by absolute alcohol. When the specimen became sufficiently hard he cut thin sections, stained these with carmine, by a method which will be presently detailed, transferred the stained sections again to alcohol, thence to turpentine, and finally to Canada balsam.

At the Museum it has been found expedient, as a general rule, to introduce the preparation to be hardened into weaker alcohol than recommended by Thiersch, replacing it by stronger alcohol from time to time until finally absolute alcohol is used; and it has been found desirable to use balsam, which has first been thoroughly hardened, and then dissolved in chloroform, so as to form a solution of the consistency of cream. By this method the use of heat in the balsam mounting is rendered unnecessary, and all difficulty in this part of the process is avoided.

The detailed procedure found most generally available at the Museum is as follows:—

The specimen intended for examination, for example, a portion of a morbid growth, or of some normal organ, such as the kidney or the liver, is laid in proof spirit, which is to be changed next day, and allowed to remain till it is thoroughly saturated, which seldom requires more than a few days. The bloodvessels should be previously injected with Prussian blue, or some suitable material, though many interesting details can be made out in cases where this is impossible. After lying a few days in proof spirit, the specimen is to be transferred to alcohol of 75 to 80 percent. and thence after a few days to absolute alcohol, in which it should remain till hard enough to cut. The time required varies in accordance with the softness of the specimens from a few hours to a week or more.

After thorough hardening the piece may be kept in absolute alcohol for an indefinite period, especially if the alcohol be changed from time to time. When sufficiently hardened, sections should be cut by a thin knife, with or without the aid of any of the ordinary cutting machines. The sections thus cut are to be stained with carmine by immersing them for a short time in Thiersch's staining fluid, which is prepared as follows: Mix one part, by weight, of carmine with one of strong aqua ammonia, and three of distilled water, for the first solution; the second solution consists of one part of crystallized oxalic acid and twenty-two parts of distilled water.

<sup>1</sup> *Der Epithelial-Krebs.* Carl Thiersch, Leipzig, 1855, p. 87.

One part of the first solution is to be added to eight of the second, and twelve of absolute alcohol, and then filtered. If the filtrate is orange, instead of carmine-red, aqua ammonia is to be added, drop by drop, until the proper colour appears. If crystals of oxalate of ammonia should form, they are to be filtered out. The solution is then ready for use.

The precise time of immersion required to stain sections successfully varies from half a minute to several minutes, and must be determined in each case by trial. When the sections have been immersed long enough they are to be washed with alcohol of 80 per cent. and then soaked in a saturated solution of oxalic acid in 80 per cent. alcohol, until the carmine remains only in the nuclei of the tissues. The time required for this varies from a few minutes to half an hour or more.

Trial having determined that the sections are soaked long enough in this fluid, those which are satisfactorily coloured are to be washed in alcohol at 80 per cent. till they are freed from all traces of oxalic acid, and then to be transferred to absolute alcohol. They are to remain in this till they have parted with all the moisture obtained during the staining process, which requires from half an hour to an hour. They are then transferred to turpentine, in which they are permitted to float till saturated, and should be immediately mounted in Canada balsam, without the use of heat. To effect this a solution of balsam in chloroform is prepared in the following manner: Evaporate some balsam over a water bath till it becomes quite solid when cold, then dissolve it in enough chloroform to give the solution about the consistency of cream. Each section is immersed in a drop of this fluid on a glass slide, and covered with a thin glass cover. The chloroform speedily evaporating leaves the balsam quite firm. The solution of balsam should be made thin enough to avoid trouble with air bubbles.

Thiersch's staining fluid, prepared as above described, has been found at the Museum to give more certain and uniform results than the simple solution of carmine in ammonia, and distilled water or glycerin, and will be preferred after trial by all to whom economy of time is an object.

Sections of morbid growths received from a distance in alcohol can be satisfactorily prepared by this method.

With regard to transparent injecting fluids it may here be remarked that the various Prussian blue fluids, including those of Beale and Thiersch, have all been found at the Museum to fade sooner or later. Experiments are now being made with a fluid suggested by Dr. J. C. W. Kennon, the basis of which is the purple of Cassius, which is a double salt of gold and tin, and which, being indestructible in acids or alkalies, quite insoluble, and of extremely fine granular constitution, will, it is hoped, be more permanent and satisfactory. The results of experiments made with this injecting fluid will be communicated hereafter.

It may be mentioned in conclusion that specimens stained with nitrate of silver after the plan of Recklinghausen, or with chloride of gold as recommended by Cohnheim, can be readily transferred to Canada balsam, and so permanently preserved. The same is true of glycerin preparations made after the method of Dr. L. Beale. The principle to be observed in any case is to transfer the specimen to weak alcohol, which is to be replaced from time to time by stronger, until by the ultimate action of absolute alcohol all the water is removed. It is then to be transferred to turpentine, which speedily replaces the alcohol, and thence to Canada balsam. The object of the gradual transfer from weaker to stronger alco-

hol, is to rob the tissue of its water by degrees, a precaution by which the shrinking and collapse, consequent upon sudden immersion in absolute alcohol, is completely avoided. The time required for this purpose varies with the size of the preparation. In the case of thin sections or fragments of tissues, suitable for the higher powers of the microscope, a few minutes in each fluid is often sufficient.

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*Case of Placenta Prævia, successfully treated by Simpson's Method.*  
By JOHN W. BOOTH, M. D., of Tally-Ho, North Carolina.

On the 22d of June, 1868, I was hastily summoned, about sunrise, to visit, with Dr. Cozart, the family physician, Mrs. R., about six months advanced in her seventh pregnancy, who had been suddenly attacked, the previous evening, with profuse and alarming uterine hemorrhage, which had almost ceased spontaneously before the arrival of Dr. C. There had been a very slight discharge of blood during the night and until I saw her. We both remained with the patient until the morning of the 23d, when leaving her to the care of Dr. C., I made some necessary calls, and returned late in the afternoon to take charge of her during the night, that Dr. C., might attend to his most urgent duties, and get back, we *hoped*, before the time of greatest need. During the whole of this time after my arrival, although very little had been done in the way of treatment, there had been no discharge and only occasional very slight uterine contraction. From the symptoms, we strongly suspected that the flooding proceeded from placenta prævia. The uterus was too high up to be reached by a common digital examination, and the urgency of the case did not yet require any further. Hence we deemed it unsafe to leave the patient without professional assistance at hand.

About 10 o'clock, having retired to bed in an adjoining room, I was awakened and informed that my presence was required, as Mrs. R. was flooding prodigiously. I lost no time, and found her almost in extremis. The bed was deluged with blood. The lady's cheeks and prolabia were blanched; she was nearly pulseless, &c.; in short, almost in a state of collapse from loss of blood, and that after a few pains, which she described as only a "drawing sensation."

I now introduced my hand into the vagina sufficiently to pass my two fingers through to the placenta, which was implanted centrally over the internal os. With my finger I detached the placenta and withdrew it, not without some difficulty. The internal os, which was barely dilated enough to admit two fingers, contracted from the irritation and impeded the movements of the finger. The flooding immediately ceased, and the patient was soon delivered of a small dead fœtus. She did very well, never having a bad symptom after the detachment of the placenta.

November 6, 1868.

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*Gunshot Wound of Bladder and Rectum; Recovery of Patient under Remarkable Circumstances.* By JOHN D. JACKSON, M. D., of Danville, Kentucky.

The following case, which we report from notes taken at the time of application for discharge by the subject of it, we chronicle as another and very remarkable instance to be added to the catalogue of cases of the wonderfully recuperative power sometimes exhibited by our species.

Michael Tipps, æt. 21, private of Co. A., 17th Tennessee Regiment, Confederate States Army, on the 26th of November, 1862, applied for a discharge from military service, because of physical disability, resulting

from a gunshot wound received while at the battle of "Mill Spring, or Fishing Creek," Ky., fought on the 19th day of January, 1862.

He says he is unable to walk a mile, run a hundred yards, or endure any kind of exertion to the point of fatigue, without its being followed by great pain in the region of the pelvis, succeeded by irritative fever, and bloody micturition. He says he was wounded in the bladder and bowels at the time above alluded to, and although the surgeons present deemed the wound mortal, and that any efforts to carry him far from the battle-field would but hasten his death, that he preferred the last to being allowed to remain behind, and be made prisoner. He was therefore placed in an ordinary road wagon, without any springs, but which had a little straw on its bottom, and in which, during a time of almost continuous raining or snowing, he was hauled over a most rugged mountain road to Winchester, Tenn., a distance of 164 miles, and that, during the journey, owing to the almost incessant jolting, and the excoriation due to the trickling of urine from the anterior orifice of the wound, and feces from the posterior one, he had a sore to form over one hip, at the bottom of which he averred that the bone could be seen. His urine and excrement he said continued to pass through the two openings for several weeks afterwards, and through each several pieces of bone came away. After he commenced passing his urine *per vias naturales*, he said he continued to pass small pieces of bone, and that even then, more than 22 months after the injury, he still occasionally passed small pieces, and by way of corroboration of his statement pulled out from his vest pocket several bits of spongy-looking bone, carefully wrapped in paper, and which corresponded in appearance with the cancellated structure of the pubic bones.

Upon stripping Tippo and examining him I found, corresponding with his statement, two cicatrices, such as are usually left after gunshot wounds, the one directly opposite the upper margin of one of the pubic bones; the other, between three and four inches in diameter, over the sacrum and over the *trochanter major* of one of his hips.

Despite the evidences of the once serious character of the soldier's wounds, the question was one of his present physical disability, and it was my duty to confirm or disprove his alleged unfitness for service. Certainly to simply look at his face he seemed the picture of ruddy health, and on stripping him the *embonpoint* of limb and body corresponded with his facial aspect. Being in the field at the time, and without microscope or chemicals with which to examine his urine, the best I could do was to take a perfectly clean tincup, cause him to urinate in it, and let it stand in my tent over night. This I did, and upon throwing out the urine next morning, the very large deposit of starch-like mucus sticking to the bottom, clearly indicated the chronic cystitis existing, and was to my mind a sufficient corroboration of the poor fellow's story of the great pain and bloody micturition following anything beyond the most limited exercise. Upon an interview with the officers of Tippo's company and with Dr. Watson M. Gentry, the surgeon of the regiment at the battle of "Mill Springs," I received a full confirmation of all he had told me of his apparently mortal wound, and his horrible midwinter journey while lying in such a perilous state. His papers for discharge were forwarded "approved," but breaking up camp that day, and the soldier returning to his home, I have never been able to gain information of his subsequent condition.

This case we have deemed worthy of putting on record not simply as one of Recovery from Gunshot Wound of Bladder and Rectum, but because superadded to this an arduous journey of 164 miles, exposed as he was,



and probably depressed by defeat, we think justly ranks it among the "Remarkable Cases" from the memory of which we frequently have occasion to draw a "forlorn hope," when our patient is almost surrounded by the clouds of despair.

DANVILLE, KENTUCKY, October 12, 1868.

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*Diaphragmatic Hernia.* By WILLIAM P. MAIDEN, M. D., of Alpeva, Michigan.

Mary J. R., æt. 7, was taken seriously ill November 15th. Her mother informed me that about one year ago she had fallen backwards upon the point of a pair of scissors; the wound bled profusely, and she had never been free from pain in the region of the wound since. The child was suffering when I saw her from severe pain in the abdomen and left lower side of the chest; abdomen distended and tympanitic; nausea and vomiting, at first of mucus and bile, and latterly of a slightly stercoraceous character; skin cold and clammy; countenance anxious; tongue coated with moist whitish fur; pulse small and quick; neither she nor her mother could remember when her bowels had been moved last. Ordered mustard over the epigastrium and seat of pain, and to take wineglassful doses of the effervescing solution of citrate magnesia every three hours, which served only to relieve the nausea and vomiting; pain still severe and of a spasmodic character; directed her to be put into a hot bath, croton oil to be rubbed on the sides over seat of pain, with a large dose of calomel and podophyllin to be taken at once and followed every three hours by tablespoonful doses of castor oil; no relief; frequent desire to go to stool, but no evacuation. At two P. M., Nov. 17, she became more restless; a cold clammy sweat broke out over her forehead; countenance more anxious; slightly delirious; craving for cold water, which she would drink ravenously; breathing short and quick; abdomen more tympanitic and distended. Gave injection of warm soapsuds and croton oil, which brought nothing away; then gave an emulsion of ol. terebinth. and ol. tiglli, which was instantly rejected with a large round worm, and vomiting continued up to the time of her death, which occurred at eleven-thirty P. M.

*Post-mortem twelve hours after death.*—Abdomen distended, tympanitic; a very small quantity of fluid in the peritoneal sac; ascending and transverse colon greatly distended with flatus; descending colon entirely empty and contracted; small intestines somewhat distended and upper portion tinged in patches with bile. A loop of the transverse and descending colon, seven or eight inches long, together with a large portion of the omentum, had passed through an opening in about the middle of the left leaflet of the diaphragm into the thoracic cavity; spleen pressed tight up against the opening.

Upon examining the thorax, intestine was found to be strangulated, of a dark claret colour, tinged with blood, and filled with turbid bloody serum; omentum covered with shreds of clotted blood, and lung pushed high up into the thorax. Opening in the diaphragm would hardly admit the point of the forefinger, and had quite a tendinous margin; no cicatrix discoverable on the pleura to correspond with that on the outside of the thorax, which was situated between the sixth and seventh ribs.

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*Removal of Ovarian Tumour, Unilocular, without Adhesions and Weighing 20 lbs.* By B. ROHRER, M. D., of Germantown, Pa.

Miss J. H. menstruated once or twice at the age of sixteen, after which time the catamenia appeared at irregular intervals. Soon after her first

menstruation, she observed an enlargement of her abdomen, which continued very gradually to increase for over two years, until she presented the appearance of being at full term of pregnancy; when I was consulted.

After a careful and thorough examination, I diagnosed an ovarian tumour; told her frankly that an operation was the only means of relief, and endeavoured to impress upon her mind its danger, and requested her to deliberate well upon the subject before giving her consent.

In less than a week she declared her willingness to undergo the operation, but she had no comprehension of its magnitude (as she informed me after her recovery), which was much to her advantage, as she continued cheerful up to the time of the operation, and escaped the mental anxiety, loss of sleep and appetite, which result in depressing the nervous system.

June 2, 1867, at 11 o'clock A. M., the patient having been placed in a half-sitting position upon a table, with feet resting upon a chair, in front of a window, fully anæsthetized with a mixture of two parts of ether and one of chloroform, I commenced the operation, in presence of Drs. Atlee, Betton, Downs, and others, by making an incision of  $2\frac{1}{2}$  inches in the *linea alba*, midway between the umbilicus and symphysis pubis, dissecting carefully through the muscles and fascia down to the peritoneum. The absence of adhesions having been ascertained, the sac was punctured by a large trocar and eighteen pints of a light-coloured highly albuminous fluid let out. The collapsed cyst was drawn through the incision and its pedicle secured by the clamp. The sac was then separated and the pedicle prevented from receding into the cavity of the abdomen by the clamp resting on the outside and across the wound. The wound was closed by one wire suture and a few adhesive strips; a thick flannel compress and a flannel bandage completed the dressing. From the commencement until the patient was comfortably fixed in bed occupied only nineteen minutes.

She was given a teaspoonful of McMunn's elix. of opium, and during the afternoon small pieces of ice to allay thirst. 6 o'clock P. M. Dozed most of the afternoon; pulse 104 and full; drew off 4 oz. of urine. 11 o'clock P. M. Rests comfortably; pulse 106, full and regular; skin moist; drew off 5 oz. of urine.

3d. Pulse 100; no pain; rested well during the night; no thirst; tongue moist; diet, rice and barley water.

4th. Pulse 96, soft and less fulness; skin cool and moist; tongue very slightly furred; more thirst, but easily quenched; had some pain in the bowels and borborygmi, owing perhaps to emptiness; had a comfortable sleep during the night and seems quite cheerful; diet, beef-tea and mutton broth; continue the catheter to keep the abdominal muscles at rest.

5th. Pulse 98, soft, full, and regular; skin natural; return of menses this morning; wound looks well.

6th. Had considerable nausea and colicky pain during the night, and consequently very little sleep; pulse 100; skin moist, but palms of hands are dry and warm; thirst continues; tongue furred; has aversion to food; ordered 10 drops of chlorodyne.

7th. Had a good night's sleep after taking 30 drops of McMunn's elix.; pulse 89; tongue furred; skin cool and moist; no tympanitis; flatus passed per anum; passes urine without the use of catheter; not much appetite; takes beef-tea, corn-starch and farina.

9th. Removed clamp; wound almost healed; no tenderness on pressure.

11th. Pulse 70; bowels were freely moved during the night; had a good appetite and feels very well after sitting in rocking chair two hours during the forenoon; removed the wire suture; the wound is completely healed.

13th. Patient dressed herself and remained out of bed nearly all day ; eats heartily and is gaining strength rapidly.

18th. Patient going about the house ; has a good appetite ; sleeps well and declares that she never felt better in her life.

April 19th, 1868. I visited Mrs H. this morning ; her health has been very good since her recovery from the operation. She menstruates regularly and there has been no tendency to hernia, where the incision was made.

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*Large Salivary Calculus Removed from Wharton's Duct of Right Submaxillary Gland.* By JOHN L. FIRESTONE, M. D., of Salem, Ohio.

A farmer, æt. fifty, called on me with a tumour in the floor of the mouth, under the right side of the tongue, which had been noticed a "good while," as it interfered somewhat with mastication, though not with deglutition.

On examination a hard tumour was felt in the place designated, apparently about the size of a hulled walnut, and on the floor of the mouth Wharton's duct was seen unusually open. A probe was easily introduced, and immediately below the surface struck a hard, rough calculus. Introduced a narrow-bladed bistoury and opened the sac parallel with the tongue, and, with the scoop end of a director, I removed a calculus 14 lines long, 8 broad, and 6 deep, and  $1\frac{1}{2}$  drachm in weight. It was yellowish-white ; oval, with flattened sides ; and was composed of "phosphate and carbonate of lime, held together by animal matter."

This salivary calculus is probably of unusual size. Rokitsky says, referring to these formations, that they vary in size "from a millet-seed or a pea, to even that of a hazel-nut."

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*Amputation at the Hip-Joint.* By B. ROHRER, Surg. 10th P. R. V. C.

Frank G., a private in a Texan regiment, was wounded at the battle of Gettysburg. The wound was in the left thigh, caused by a grape-shot, which entered two inches below the trochanter major, shattered the bone up into the neck, and lacerated the soft parts terribly between the place of entrance and the knee. He remained on the battle-field from the second until the fourth day of July, with very little attention until he was brought to the hospital of the Fifth Army Corps. After a consultation with a number of surgeons, and the conclusion being in favour of amputation at the hip, the patient was placed upon the table, and, when fully under the influence of chloroform, I performed the antero-posterior operation, assisted by Jos. A. Philips, Surgeon-General of Pennsylvania, and Henry Grimm, Surg. 12th Pa. Reserve Vol. Corps. Surg. Philips controlled the femoral artery, and not over three ounces of blood were lost. Death followed in thirty-six hours.

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#### DOMESTIC SUMMARY.

*Physiological Action of the Bromide of Potassium.*—Our contemporary, the *Boston Med. and Surg. Journ.* (Oct. 22, 1868), contains an interesting paper by Dr. H. P. BOWDITCH, on this subject, giving the results of recent observations, and of some experiments made at the Massachusetts Medical School during the past spring, by a class of students under the direction of Prof. E. H. Clarke and Dr. R. Amory.

The author thinks that from these experiments and observations he may draw the following conclusions:—

- "1. The bromide of potassium is rapidly absorbed.
- "2. Though it appears quickly in the urine, it is, upon the whole, not very rapidly eliminated.
- "3. It is eliminated unchanged by the kidneys, the skin, and, perhaps, by the intestines.
- "4. It is sometimes decomposed in the system and free bromine eliminated by the breath.
- "5. While passing into the system it acts as a local irritant on the surfaces through which it passes.
- "6. While in the system it acts as a vascular and nervous sedative.
- "7. While passing out of the system its primary effect is to diminish all the secretions, except perhaps the urine, but secondarily hypersecretion may be induced."

*Acupressure of Arteries.*—Dr. HUTCHINSON presented to the New York Pathological Society the carotid artery of a dog, that had been closed in its continuity by acupressure. The pressure was discontinued at the end of twenty-four hours, and the artery itself removed twenty-four days after the operation. A quarter of an inch above and below the constriction the vessel was obliterated and converted into a fibrous cord, as proved by microscopical examination by Dr. Stiles, of Brooklyn.

He remarked in that connection that during the last twelve months he had acupressed fifty arteries: one in a case of amputation at the knee-joint; two in amputation of the leg; two of forearm; one of the arm; one of the foot; and in several smaller operations. In all these cases the union was more rapid than when the ligature was applied, and there was never any secondary hemorrhage. The needles were removed from the radial and ulnar in twenty-two hours, from the popliteal in forty-eight hours, while in some smaller vessels thirteen hours sufficed.—*Med. Record*, Dec. 1, 1868.

*Treatment of Organic Infantile Paralysis by the Continuous Galvanic Current.*—Dr. WM. A. HAMMOND states (*Quarterly Journ. Psychological Med.*, July, 1868) that some time since he gave his views relative to the pathology and treatment of a very persistent form of infantile paralysis, and that he is now in a position to speak more authoritatively on the subject. He then insisted upon the employment of the direct galvanic current as indispensable in those instances where the muscles would not contract to the stimulus of the induced current, and referred to several cases in which its efficacy had been clearly established. Since that time he has had many opportunities of testing the advantages of this therapeutic agent; and has moreover been using a battery far more efficacious and convenient than any that has come under his notice. This battery is the one invented and manufactured by Dr. Emil Stöhrer, of Bresden. "The advantages of this battery," he says, "are inestimable. When not in use there is no destruction of zinc, or deterioration of acids. The current is regular and constant, and with a daily use of from four to six hours, for three months, I have not had to renew the acids, cleanse the carbon cylinders, nor amalgamate those of zinc. The whole arrangement is fully described in Ziemper's *Electricität in der Medicin*. Zweite auflage. Berlin, 1864, p. 81; to which work the reader is referred for a fuller account of this admirable apparatus."

Dr. H. says: "It would be tedious to describe at length all the cases of infantile paralysis which I have treated with the direct galvanic current. If a contraction can be induced by it, recovery is merely a matter of time, but if no action of the paralyzed muscles can be brought about, the prognosis must be unfavourable. But even here there is hope, for in a recent case sent to me by my friend, Professor W. H. Van Buren, M. D., where, after the application of the current from Stöhrer's machine, no contraction could be caused in a paralyzed tibialis anticus muscle, I succeeded a few days afterward in producing very decided action by the same means.

"In only three cases which have come under my notice was the disease so

far advanced as to be in my opinion incurable. In fifteen no contraction of the paralyzed muscles could be effected by the strongest induced currents, while the direct current of feeble intensity caused strong contractions. As remarked by Dr. Radcliffe in the memoir already quoted, there appears to be no limit to the prospect of recovery if the electric contractility of the muscles is not utterly destroyed. But in most cases a long time is required to effect a cure, and even when the muscles are entirely restored, they must be re-educated to the performance of their functions. Few parents comparatively have the patience to wait and to devote the necessary time to doing their part of the work. Unless there is reasonable assurance in regard to these points, it is better not to undertake the case. It is not, except in recent cases, a matter of days, or of weeks, but of months, and sometimes of years."

*Snare for removing Foreign Bodies from the Urethra.*—Dr. J. T. HODGEN, Professor of Anatomy in St. Louis Medical College, describes (*St. Louis Med. Journ.*, Nov. 10, 1868) a very ingenious instrument for this purpose. He was called to a child suffering from retention of urine, and passing a catheter about two inches into the urethra it came in contact with a calculus. Not being provided with the usual instruments for removing such an obstruction, it occurred to him that by bending the wire found in his silver catheter (used to clear the instrument) he could form a loop that would readily pass the stone and encircle it, and that the stone might be withdrawn as corks are removed from bottles. He immediately put this idea into practice and drew out the calculus. He was subsequently called to a similar case, in which he resorted to the same expedient with like success.

He has since had an instrument made on this principle, with two wires forming a double loop, which will no doubt prove useful.

*Atropia as an Antidote to Opium Poisoning.*—Dr. M. S. BUTTLES relates (*Med. Record*, Aug. 15, 1868) the following case occurring in his practice, which shows the value of belladonna in cases of poisoning by opium:—

"Mrs. W., aged 38, has been troubled with retroversion, perimetritis, and severe endometritis, and has had several severe attacks of pericarditis, which have left extensive adhesions.

"Had severe neuralgic pains all along the left side, for which I had been in the habit of giving her subcutaneous injections of gr. ss morphinæ sulphatis.

"On January 20th last, I gave her one of these hypodermic injections, which gave but slight relief; the next morning I repeated it, injecting exactly  $\text{m. xv.}$  Magendie's solution (equal to gr. ss morphinæ), and remained in the room fifteen or twenty minutes, when she seemed a little easier, and I retired to my office downstairs; but was very soon summoned by the nurse, who stated that Mrs. W. was dying.

"I found her lips purple, the respiration seven per minute, no pulse at the wrist, but one sound at the heart; pupils contracted to a fine point, frothing at the mouth, and the extremities cold.

"I commenced artificial respiration (for while I was cogitating on my handiwork, she entirely stopped breathing), which by myself and assistants was kept up for about half an hour, when I attempted to give her some strong coffee, but she could not be made to swallow. I had sent for several neighbouring physicians, who were all out; but just at this moment my friend, Prof. Chas. A. Budd, providentially called on me, and was immediately shown to the room. He declared that she was dead, and 'laughed in his sleeve' at the idea of keeping up artificial respiration.

"By this time I began to think of sending for an undertaker (for she had come to me from a neighbouring city for treatment), but as a 'drowning man clings to a straw,' so I was eager to give her every possible chance, and asked Dr. Budd to suggest something, at the same time mentioning belladonna, when he said that atropia might be given hypodermically, if I wanted to do something, but as she was dead it would not bring her around. We resolved, however, to try it. By this time artificial respiration had been kept up for an hour and a half. One-sixtieth of a grain of the sulphate of atropia was injected, and in fifteen minutes she showed signs of life, the pupils began very slightly to dilate, and in ten

minutes more she began to breathe, and the respirations rose to twelve per minute; in half an hour we repeated the dose, making in all one-thirtieth of a grain of atropia; and in about fifty minutes from the time of giving her the first injection, she returned to consciousness, and is living now, with a blank in her life of two and a half hours.

"To Prof. Budd is due the credit of suggesting the remedy."

*Lactate of Zinc in Epilepsy.*—Dr. HART has tried this remedy in combination with belladonna on 240 patients in the Western Lunatic Asylum of Kentucky, all of whom had been affected with epilepsy from three to six years. An improvement took place in all, and in no case did he use it without effectually controlling the paroxysm in from twenty-four to forty-eight hours. His formula was: R.—Zinci lactatis gr. xxx; ext. belladonna gr. viii. M. ft. pil. x. S.—One before each meal.—*Humboldt Med. Archives*. Aug. 1868.

*Chlorosis a Disease of the Nervous System.*—Dr. WM. A. HAMMOND maintains (*Quart. Journ. Psycholog. Med.*, July, 1868) that chlorosis is primarily and essentially a disease of the nervous system, and that the changes which sometimes—by no means invariably—take place in the composition of the blood, are consequences of the nervous disorders, and not its causes.

"I do not contend," he says, "for the invariable occurrence of chlorosis without depravation of the blood. I insist, however, upon the point that chlorosis is a disease of the nervous system, and that when morbid changes take place in the blood during its continuance, they are always secondary and directly the consequence of the nervous derangement, and that therefore they are nothing more than accompaniments of the chlorotic condition; also that frequently chlorosis runs its course without any of the symptoms of pathological changes in the blood being manifested. In the enunciation of this opinion I claim nothing on the score of originality. . . . I merely wish to present the view more connectedly and prominently than has yet been done."

*Removal of a Portion of the Inferior Maxilla for a Fibro-Cartilaginous Tumour.*—Dr. WM. H. DAVIES, Assistant Surgeon to California State Woman's Hospital, relates (*California Medical Gazette*, September, 1868) an interesting case of this:—

"I, S., æt. 10, was brought by his parents to consult me about a tumour involving a portion of the right half of the inferior maxilla. The tumour had been correctly pronounced by several surgeons to be fibro-cartilaginous; but the point to be determined was, the operation necessary for its removal—whether the tumour could be removed without taking with it any portion of the maxilla. I advised the removal of the tumour, and a portion of the maxilla, to which they readily agreed; and two days after, the patient being under the influence of chloroform, I proceeded to perform the operation advised by Mr. Syme, by making an incision downwards from the angle of the mouth, thence along the tumour to the extent of about six inches. Having carefully separated the flap from the tumour, I extracted two teeth, so as to permit of the more easy division of the bone, and having partly sawed through the jaw, completed the division with strong cutting pliers, and having turned the bone outwards and separated its connection with the muscles and mucous membrane of the mouth completed the operation.

"I then lightly plugged the cavity with lint, brought the ends of the divided maxilla as nearly in line as possible, by strong silver wire attached to the teeth, and carefully approximated the edges of the wound by silver sutures; applied a bandage, which I ordered to be kept constantly wet, over the whole line of incision. The patient was fed by means of a tube and nutrient enemata. The sutures were removed on the sixth day, and by the tenth I had the satisfaction of seeing complete union of the entire wound. On the twenty-first day I allowed him to go home, and I did not again see him for about five weeks, when I found the space between the ends of the bone nearly filled up by a tough semi-tendinous structure, and the whole jaw tolerably firm. I did not see him again for three months, when he presented himself, a perfect picture of good health, the side operated on being of rather a better shape than the sound one; but, on opening

his mouth, I was greatly surprised to find in the centre of the new structure a perfectly formed tooth. For this I can by no means account. The portion of maxilla was completely removed, not even a piece of periosteum being left. Whence, then, the tooth? I have not been able thus far to hear of any similar case. Up to the present time, the boy remains perfectly well, using the right as freely as the left side, and employs the new tooth as a means of mastication.

*Treatment of Stricture of the Urethra.*—Dr. JAMES R. WOOD, in a discussion on this subject at the Medical Society of the county of New York, said some denied the occurrence of stricture of the prostatic portion of the urethra, but “the records of Bellevue Hospital would show that, within two years, he had met with three cases, upon all of which he had successfully operated. These strictures were all three traumatic; he had never seen prostatic stricture from gonorrhœa, and it was very rare from any cause.

“Internal urethrotomy he had often performed, and would do it again, within three inches of the external orifice; and deeper than this, if he could introduce Civiale’s instrument beyond the stricture, so as to cut outwards. But to cut in the opposite direction a stricture too deeply seated to be under the control of the thumb and finger he deemed very hazardous.

“The ‘medical surgery’ of stricture was too little regarded. A patient would come into hospital passing his urine *guttatim*; he would put him on his back; apply a poultice to the hypogastrum; an ointment of belladonna or stramonium to the perineum; insert an opiate suppository in the rectum; inject warm oil into the urethra. Presently the oil would flow into the bladder; and, with no surgical manipulation, the man would pass a stream, say as large as a knitting-needle. Of late he had added a little carbolic acid to the sweet oil, having been led to do so by its happy effect on urethritis. Carbolic acid in combination with glycerine he had used in the treatment of clap, with the best results. The medical treatment, then, must not be forgotten. Many a poor fellow had his bladder punctured, and within forty-eight hours afterwards sent a tolerably good stream through the natural channel.

“In conclusion, Dr. Wood described an operation which he had for some years been performing, and of which he had seen no mention in the practice of other surgeons. Cutting down, after Syme’s plan—a staff being fixed at the distal end of the stricture, and a slender bougie being also, if possible, passed into the bladder—he had found that, as he approached the urethra by slow and cautious dissection through the fibrinous deposit, the stricture would gradually yield, until, without entering the canal or wounding the mucous membrane, he could by degrees press the staff on towards the bladder. This mode of relieving the stricture answered to the operation for strangulated hernia without opening the sac. He had repeatedly performed it successfully; he had also repeatedly failed, and been obliged to cut into the urethra, as would always be the case in traumatic stricture, or in idiopathic where the mucous membrane was much diseased. But it was always worth trying, for, where applicable, it offered the great advantage of rendering urinary infiltration an impossibility. And to such infiltration and the pyæmia consequent upon it were to be ascribed most of the fatal results of perineal section.”—*Med. Record*, Dec. 1, 1868.

*Aspermatism.*—Prof. W. H. VAN BUREN records (*New York Med. Journ.*, Nov. 1868) a very curious case of this. The subject of it was “a spare-built, undersized man, but healthy and strong, and very straightforward and truthful in his manner. He complained of the occurrence, at intervals of from two to six weeks, of erotic dreams, attended by profuse seminal emissions, and followed by a sense of weakness; also, of the escape of a ‘clotted glutinous fluid’—evidently seminal—from the urethra after passing water, about every other day, and most noticeably in the morning on rising. Now comes the curious feature of the case: He had never been able, in sexual intercourse, or in any other way, to bring about the venereal orgasm, or to provoke a discharge of seminal fluid. He had prolonged the effort, on many occasions, to the full extent that his strength would permit, but with no result. At present he experiences no pleasure in the sexual act, rather a feeling of disappointment, indulging (if this

expression can be properly used in such a case) but once in a month, and then only as a matter of duty, and in the hope of a more successful issue. In his dreams he is conscious of a full orgasm and free emission; but he has never had this happen to him when awake—so that the only knowledge he possessed, as to the nature of the complete venereal act, had come to him in his dreams. He had never attempted to provoke an emission by unnatural means; had never experienced any temptation or desire to do so, and would not know how to go about it."

As the patient's prepuce was very long, Dr. V. recommended circumcision, which, however, was without benefit.

Dr. V. states that Dr. FELIX ROUBAUD, in his "*Traité de l'Impuissance et de la Sterilité*," records several similar cases.

*Hernia of the Liver.*—Dr. G. F. BRICKETT records (*New York Med. Journ.*, Dec. 1868) a curious case of this in a new-born female child. On preparing to tie the cord, he observed a large tumour protruding through an aperture in the abdominal wall at the site of the umbilicus, extending from the lower edge of sternum to near the pubes. The integuments were dark and excoriated. Dr. B. tied the cord about three inches from the tumour. On his visit three days afterwards, he found hemorrhage from the tumour, which proved fatal that evening. On examination he found the tumour to be formed of an enormously large misplaced liver, the whole of which was in front, and covering nearly all the contents of the abdomen, being above and anterior to the diaphragm. The right kidney was large; all the other organs healthy and well formed.

*Elephantiasis Arabum of the Left Leg and Foot.*—Dr. THEO. A. MCGRAW records (*Detroit Rev. of Med. and Pharm.*, Nov. 1868) a case of this unsuccessfully treated by ligature of the femoral artery.

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## TO READERS AND CORRESPONDENTS.

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Contributors who wish their articles to appear in the next number, should forward them before the 1st of May.

Compensation is allowed for original articles and reviews, except when illustrations or extra copies are desired. A *limited* number of extra copies will be furnished to authors, *if the request for them be made when the communication is sent*.

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St. George's Hospital Reports. Edited by JOHN W. OGLE, M.D., F.R.C.P., and TIMOTHY HOLMES, F.R.C.S. Vol. III., 1868. London: John Churchill & Sons.

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Communications intended for publication, and Books for Review, should be sent *free of expense*, directed to ISAAC HAYS, M. D., Editor of the American Journal of the Medical Sciences, care of Mr. Henry C. Lea, Philadelphia. Parcels directed as above, and (carriage paid) under cover, to Mr. Charles J. Skeet, Bookseller, No. 10 King William Street, Charing Cross, *London*; or M. Hector Bossange, Lib. quai Voltaire, No. 11, *Paris*, will reach us safely and without delay.

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ART. I.—*A New Method for securing Divided Vessels ; and on the Use of Carbolic Acid in Surgical Operations for facilitating Union by First Intention.* Read (by invitation) before the Dutchess County Medical Society, at Poughkeepsie, January 9, 1869. By FREDERIC D. LENTE, M. D., of Cold Spring, Honorary Member of the Society.

For many years the inconveniences and even dangers of ordinary ligatures have been appreciated by surgeons, and their ingenuity has been taxed to provide some efficient substitute. Several devices, more or less valuable, have been recommended, and, to some extent, experimented upon. These have all been of too recent introduction, however, and their use too restricted, as yet, to permit of a judgment as to their respective merits.

*Animal* ligatures have had a trial long ago. *Acupressure* has been quite extensively tried in Great Britain, where it originated; but from the fact that, after a very considerable lapse of time, and a very considerable amount of experiment and commendation from surgeons of high authority, another mode of treating arteries (by torsion) has been brought forward by British authority, and has been highly commended also, it seems evident that *acupressure* has not acquired the confidence of British surgeons generally. It has been but little employed in this country as yet; not so much as its apparent merit deserves. It cannot be considered, therefore, as a substitute for the ordinary ligature. The recommendation of *torsion*, or rather its revival, is quite recent; for it was experimented upon long ago, and, in a measure, forgotten. This method has been lately applied to arteries of all sizes, and to every variety of operation, and reported upon by surgeons of recognized authority. According to these reports, it has suc-

ceeded in every instance. If the subsequent experience of other surgeons should coincide with that of the few who have thus been bold enough to trust to it, we may certainly claim it as one of the most valuable improvements of the present day in surgery. But, I imagine, it will be long before the most positive assurances of safety from surgeons of the greatest eminence, and the most imposing array of statistics to back them, will induce the great mass of surgeons to trust the femoral, or the brachial, or the tibials to simple twisting for a security against secondary hemorrhage; especially in country surgery, where the surgeon may be separated from his patient by miles. I foresee one serious objection to the plan; unless the fact asserted by its author be demonstrated beyond a doubt by a much larger experience "that a hemorrhage once completely arrested by torsion cannot recur." It is this: that as the artery, say the femoral or brachial, requires to be drawn out of its sheath for a considerable distance, in order to be twisted properly, secondary hemorrhage, if it *should* occur, would come from a point so high among the tissues of the stump, from the retraction of the divided vessel, as to render its subsequent ligature a very difficult matter.

There still remains, then, a desideratum in this respect; some simple contrivance like the old silk ligature, which every one can understand and apply in all cases, and to all vessels, and to which the disadvantages of the ligature shall not pertain. I beg leave, but with becoming diffidence, to recommend such a one to the profession, because it is not already established by sufficient experimentation, but introduced to notice in the hope that my professional brethren, or some of them, may deem it of sufficient importance to assist me in establishing its value, or the reverse. The idea is simply this: cut off a length of silver wire, say three inches, less will do, however, for small arteries; give it a sharp bend in the middle, then one or two twists as near the bend as possible. This forms the ligature. *Mode of application.*—Secure the twisted end of the ligature in a pair of spring or catch forceps, and it is ready. Draw out the vessel to be ligated, or, if a small one, the tissue in which it is, with a tenaculum or forceps, in the usual manner; let an assistant apply the ligature against the vessel at the point where the two legs diverge from the twist; then the surgeon takes hold of the two ends and gives as sharp a twist on the vessel as possible, and then secures the hold by two or three half turns. The silver wire is so soft and pliable that but very few turns are necessary to prevent slipping. After a little practice, these ligatures may be applied with great facility. At first, it is a little awkward compared with the silk ligature, but compared with any other mode of securing vessels it is more simple. As regards the size of the wire, the surgeon will perhaps use his own judgment; but I have used ordinary *suture* wire for the smaller arteries, and a larger wire, No. 26, for large arteries. The suture wire would be strong enough to hold any artery, I think; but if drawn tightly



it would probably be more liable to damage the inner coats, which is not desirable, and there is more uncertainty in making the twist take a firm hold of the artery while tightening the larger wire. The surgeon, having twisted the wire, cuts off the end with ordinary scissors, within two or three turns of the artery; the other end, if not too long, may be left, as we thus avoid having *two* sharp ends to the ligature. This leaves a very minute quantity of metal around each vessel, so little in fact that, after a dozen such ligatures have been applied, it becomes somewhat difficult, in course of half an hour, to find one of them, except by searching carefully. They soon imbed themselves in the tissues, and disappear from sight.

The advantages of this mode of ligating are obvious, provided we can be secure against further trouble from the foreign substances left in the wound. I was induced to believe that pure silver would become encysted, and would thus not give rise to any future inconvenience from the fact that substances, much more likely to irritate and inflame the tissues, remain in them harmless for an indefinite time. For instance, rough leaden bullets of irregular shape, even pieces of iron, if clean; needles have been frequently known to remain for many years in various tissues of the body, not only without producing any inflammation, but without making the subject aware of their presence; except, perhaps, when in travelling, as they often do, long distances, they interfere with some important nerve. The non-liability to give rise to inflammation, or even irritation, in these cases, is not the exception, but the rule. May we not, therefore, reasonably infer that small particles of pure silver will seldom produce inflammation and suppuration; and that even if they should do so, as we must expect they will, in exceptional cases, the evil would be far less serious or annoying than those incident to other modes of securing vessels, especially to the ordinary silk ligature, with which we have at present to compare this method.

It is becoming generally admitted by surgeons that it is better to *compress* the inner coats of an artery merely for the arrest of the current through it, than to destroy their integrity.<sup>1</sup> The danger of secondary hemorrhage especially appears to be much less. But, in using the ordinary ligature, it is necessary to tie very tightly, or there is risk that, in the further manipulation of the wound, it may be drawn off the vessel; or, what is worse, become so loosened that it may be detached prematurely after closure of the wound, and thus give rise to secondary hemorrhage. There being no ends to be pulled upon in the case of the wire ligature, there is no necessity to twist so tightly as to injure the coats of the vessel. In the case of patients whose blood is in a very bad condition from disease, from imperfect nutrition, exposure, fatigue, &c., circumstances which

<sup>1</sup> Dr. Warren Stone, of New Orleans, as long ago as 1859 (see *N. O. Med. and Surg. Journ.*, Sept. 1859), enunciated this theory, and put it into practice.

constantly pertain to the wounded of large armies, who have often to be transferred long distances before receiving proper care or nourishment, the great danger, after operations, is from *secondary hemorrhage*. And, under the above conditions, this occurs only a few days after the operation, before the usual time of separation of the ligature. In such cases the coagulum is slow in becoming consolidated; and there being only the thin outer coat of the artery left intact, and this compressed by a foreign substance of an extremely irritating character, ulceration readily ensues, and the soft coagulum is forced out. These accidents happened so constantly at a military hospital near Fortress Monroe, of which the writer had temporary charge during the war, as to excite considerable discussion among a number of distinguished surgeons congregated there, as to its cause, among them Professors W. Parker and A. H. Stevens, of New York. These patients had been, for the space of eight days, which elapsed after the battle of Williamsburgh, and before their arrival at Old Point Comfort, subjected to various privations and discomforts, including exposure, and very insufficient nourishment and even water. I feel that the lives of many of these poor fellows might have been saved by the use of the wire ligature, after amputation especially; particularly if applied so as not to destroy the continuity of the arterial coats.<sup>1</sup> During the progress of operations, where a considerable number of ligatures are required, the management of the numerous long threads, which have become more or less entangled and glued together by the constantly forming coagula, is frequently a source of no little embarrassment. And this is particularly the case when we have to reopen a wound for secondary hemorrhage. Two of the cases included in this paper illustrated the advantages in this respect, of the silver ligature. Another advantage of silver wire over silk is that the former never breaks; while, in the hands of the most competent surgeons, I have seen great annoyance and dangerous delay, in securing arteries, occur from the constant breaking of the silk ligature, especially in tying the second knot, and this is more apt to occur during the excitement produced by rapid and profuse hemorrhage, just when it is most important that it should *not* occur. A circumstance, which renders the superiority of the permanent over the temporary ligature more conspicuous, is the recent introduction of the use of *carbolic acid* for surgical dressing, to which I shall presently invite attention.

<sup>1</sup> Dr. McParlin, Medical Director of the "Army of the Potomac" during its operations under General Grant, informs me that the wounded, sent to the different hospitals, after the *first* battles of the Wilderness, and while they were in fine physical condition, progressed favourably, and that secondary hemorrhage was not common; but that the wounds of those sent from the subsequent battles progressed badly, and that secondary hemorrhage was frequent; and this occurred, as in the cases under my charge at Fortress Monroe, within an unusually short period after operations; due, as he supposes, to the impoverished, aplastic state of the blood, induced by fatigue, exposure, and want of proper variety of food.

The following cases are those in which I have employed the silver ligature. Two of them are, however, too recent to be of much assistance in enabling us to judge of the ultimate action of the wire. At some future time, the final result of the treatment, whatever it may be, will be published.

CASE I.—Mrs. M., sister of a physician of good standing in Pennsylvania, was recommended to consult me about a tumour of the left breast which had been growing rather rapidly. It was undoubtedly malignant, and its removal was at once decided upon. In consultation with Drs. McParlin and Wiggin, of the army, I determined to use the wire ligature for securing the vessels. The operation was performed on the 17th of August last; and, with the assistance of the above named gentlemen, I applied eleven ligatures to bleeding vessels; ten of silver, one of silk, when the wire was exhausted. This was a very unusual number for such an operation, and the advantage of the wires was thereby manifested to all of us, in one respect, that is, in facilitating the sponging of the wound and the searching among the tissues for bleeding points, after a number of ligatures had been applied. After all oozing had ceased, I brushed over the wound (before the patient had recovered from the effects of the ether) a mixture of one part of carbolic acid (solid) to two parts of glycerine and water. It whitened the tissues immediately, like a strong solution of nitrate of silver, and seemed, for a time, to increase the oozing; after this had again mostly ceased, the mixture was again applied. The patient, on recovering from the effects of the anæsthetic, felt no unusual smarting of the wound, in fact less than usual. The edges of the wound were accurately brought together with a number of fine sutures of silk, and a strip of lint, saturated with a solution of solid carbolic acid in an equal quantity of glycerine, was applied over the line of junction, and a bandage applied.

21st. No appearance of inflammation whatever; not even any tenderness except on pretty firm pressure. The strip of lint remains firmly adherent. No change of dressing.

23d. Patient has an attack of dysentery, to which she has been subject for several years. Yesterday there was a little suppuration at the lower corner of the wound, where I had introduced a small tent for fear of concealed pus.

25th. The inflammation has extended slightly upwards, and a circumscribed induration is felt at one point.

28th. Opened a small abscess.

September 1. The abscess healed almost immediately after the evacuation of its contents; a slight discharge at the lower corner of the wound; no tenderness on pressure over any other part of the wound.

December 11. For some time a loose wire has been floating about in the situation of the abscess; but the skin over it is perfectly sound, and there is no inflammation under it. It has given no inconvenience except a pricking now and then. It was no doubt detached by the suppuration. around it. One end was pushed against the skin, a small incision made, and the wire removed, looking clean and bright. Another is felt in close proximity to this; but as it is probably adherent, it is not disturbed.

Remarks.—This was an unfavourable case both for the success of the wire and of the *carbolic acid*. The patient was in an exceedingly feeble

condition, labouring under chronic uterine disease, for which she had been under treatment for nearly a year; and also under *prolapsus recti*, and chronic intestinal catarrh, and her blood was in a very impoverished state. During the healing of the wound she was attacked with jaundice, and a carbuncle of considerable size formed over the left hip; and yet almost every part of the wound united at once. She is now, February 6th, 1869, still under treatment for her various infirmities, and her wound gives her no inconvenience whatever.

CASE II.—This was a reamputation by the circular method (of the thigh) by Dr. Geo. Murdock, my assistant, December 17th, 1868. I had amputated the leg (crushed by a coal car) some three weeks previously, when the patient was almost pulseless from shock and loss of blood, and he was also in a bad state of health, suffering from chronic diarrhœa. Sloughing of the upper flap took place. Patient was in a very feeble condition when the second operation was performed. I applied nine ligatures, three of No. 26 wire; one of these on the femoral artery, and one on the vein, and six ligatures of ordinary suture wire. This was an unusual number of ligatures; but there was an unusual disposition to hemorrhage, and on this account it was thought best not to close the wound except by merely approximating the edges with a few adhesive strips.

Six hours after the operation, Dr. M. was summoned, and found the stump bleeding profusely, and patient well nigh exhausted. He found a number of bleeding points, but one large jet in particular; this vessel had retracted to such an extent that he traced it up full two inches under the integument before he secured it. He tied some four or five other vessels with the silk ligature; as he had neither silver wire on hand nor medical assistance. He did not see a single one of the nine silver ligatures during his long manipulation of the wound, except that on the femoral artery. He thought that if he had had nine silk threads floating about in the wound, the tedious process of finding and securing the bleeding points, with no proper assistance, would have been still more tedious; and that, in the very feeble state of the patient, the additional delay might have caused the sacrifice of his life. He was able to ascertain positively, from his knowledge of the situation of the silver ligatures, that the hemorrhage did not come from any artery previously secured by them, but from entirely different points of the wound.

The patient is now, February 6th, doing well; the stump soundly healed and giving no trouble, though he is still having occasional attacks of diarrhœa.

CASE III.—On the 29th of December, 1868, I amputated the forearm of a healthy young man for gunshot wound. With the assistance of Dr. Murdock, I applied six suture wire ligatures to as many bleeding vessels, including the radial, ulnar, and interosseous; a solution of one part of carbolic acid in three parts of glycerine and water was then brushed freely over the wound, which was brought together with fine silk sutures, and a compress soaked in a mixture of carbolic acid and glycerine (equal parts) placed over it, and a bandage over the whole. There was a considerable oozing of dark, bloody matter after the sutures were applied, which was pressed out of the wound as far as possible before the application of the bandage.

*January 6*, ninth day. The wound has been doing remarkably well, except that there is no union by first intention. There was considerable oozing of dark, bloody fluid for a couple of days, and it is now suppurating. There has been no heat, swelling, or redness, and no pain from the time of his recovery from the anaesthesia up to the present time.

*February 6*. The stump has been soundly healed for some time, and gives no trouble whatever.

CASE IV.—I performed, November 3, 1868, partial amputation of the hand, with the assistance of Dr. Murdock, for injury by a circular saw, and applied one silver ligature to a bleeding vessel of some size. The wound was then brushed over with the carbolic acid mixture, and loose dressings applied. The wound, of course, healed by granulation; and, after a week or more, the wire ligature was discharged.

CASE V.—Mrs. P. This was an amputation of the leg, above the ankle, for gangrene of the foot caused by embolism of the iliac artery. Patient had been an invalid for several years, and had been confined to bed for months from the effects of an intra-uterine tumour, profuse menorrhagia, &c. An extensive bed-sore had formed over the *sacrum*, and smaller ones elsewhere; both lower extremities were very œdematous, the œdema extending above the hips. Patient was, of course, in a very unfavourable condition for operation, but it was imperatively demanded.

I operated on the 18th January, by the circular method, assisted by Drs. McParlin and Marsh, of the army, and Dr. Murdock. Applied the silver ligatures to the anterior and posterior tibial arteries, and one other, and twisted the others. Then brushed the stump freely with diluted carbolic acid (one part to 9) and dressed with sutures, adhesive strips, and bandage.

*January 20*. No swelling or other signs of inflammation, and no discharge; removed bandage and plasters.

*21st*. A discharge of a few drops of turbid serum from one point. Water dressings; the wound, as far as the integument is concerned, has apparently united throughout; the adhesion having been broken up with the probe at the point above mentioned. Water dressings.

*February 12*. The adhesions all melted away, and the stump has remained in a perfectly inactive, lifeless condition until the past few days; but now, under the influence of injections of diluted carbolic acid, some attempts at a reparative action are manifested.

CASE VI.—Mrs. C. This was an amputation of the leg, by the circular method, which I performed on the same day as the last, and with the assistance of the same gentlemen. It was undertaken for the removal of a very interesting disease of the tibia, a form of *osteitis*. This patient was likewise in a very unfavourable condition for the operation, from long suffering, and only recently nursing a baby. Although the disease was situated below the middle of the tibia, and apparently only affecting that bone, it was ascertained, after amputation, that all the bones of the foot, and both the tibia and fibula, throughout their whole length, were much softened, and their compact tissue much attenuated. The stump, as in the last case, was in a most unfavourable state for close dressing; but we all thought it advisable to attempt it; and after applying four silver ligatures, and brushing over the stump with the carbolic acid solution (1 to 9), it was dressed in the same manner as the last.

*February 12.* Patient continued in a very low condition for several days after the operation, retaining almost nothing in the stomach, and nourished by nutrient and stimulating enemata. On the day succeeding the operation, the stump was doing quite well and dressings not disturbed. But on the day following this, it became swollen and painful, and the dressings and sutures were all removed, and gave egress to a quantity of unhealthy pus, clots, and detritus of various kinds, and clear oily matter from the tibia. Owing to the general condition of the patient, the stump, for some time, remained in a very inactive condition, secreting only a serous fluid. But after injections twice a day of a solution of carbolic acid (1 part to 20), it assumed a much more healthy state, and has quite filled up with tolerably healthy granulations.

Subsequent to these operations, and while engaged in preparing this paper, I first became aware, through my friend Dr. E. J. Marsh of the Army, of Dr. B. Howard's valuable experiments on metallic ligatures, detailed before the New York Pathological Society last winter, and with the earlier experiments of a somewhat similar nature alluded to in the discussion which followed the presentation of his interesting specimens. (See *New York Medical Record* and number of this Journal for January, 1868, page 282.) But I can nowhere discover that any one has yet experimented upon the use of the wire ligature for arresting hemorrhage in general operations.<sup>1</sup> From Dr. Howard's experiments, too few as yet, however, to settle the point, it would seem to be a matter of very great importance to place the ligature on the vessel as *loosely* as is consistent with safety and the attainment of the desired object. For in the two cases in which this was done, no irritation followed, and the wire became safely encysted. But, in all the cases in which a ligature (of whatever material) was tied, or twisted *firmly* about the artery, some suppuration, and the subsequent extrusion of the ligature ensued.

This happened when the ligature was placed around the continuity of the vessel. Whether the same result will follow its application to the divided extremity of the vessel remains to be proved. There are reasons for believing that such will not be the case, and Professor Howard himself seems to think so. In ligating the small arteries, during an operation, there is usually some surrounding tissue taken up with the vessel, and this protects the latter to a sufficient extent probably to prevent destruction of any of its coats, without any special caution on the part of the operator. In ligating an artery of any size, drawn out from its sheath, it would be better, in the present state of our knowledge on the subject, to twist the wire just firmly enough to prevent its slipping off; and the latter will not easily happen, as the vessel and ligature are soon retracted out of sight, and out of the

<sup>1</sup> It may seem singular that the notice of these experiments should not have fallen under my observation earlier, but they were reported and discussed during my absence from the country last winter, and their record has remained buried under an accumulation of journals on my shelf to the present time.

way of being disturbed even by quite rough manipulation of the wound, as has been thoroughly demonstrated in all my operations.

An important object, in substituting silver wire for silk in ligating arteries divided in operations, is of course to secure a better chance for "union by first intention." By this, we not only avoid, to a considerable extent, unseemly cicatrices, and secure a more rapid convalescence for the patient, but, what is of more importance, we diminish the danger of death from an open, suppurating wound with its constant liability to erysipelas, pyæmia, exhaustive discharge, and a long train of evils, of which hospital surgeons, at least, are but too well aware, especially those attached to the Parisian hospitals. In close connection with the use of silver wire for promoting "union by first intention," comes in another recent improvement in surgery, the employment of *carbolic acid*. Mr. Lister's recommendation of its use, only a short time since, for promoting the rapid healing of *accidental* wounds of every description has been extensively acted upon, and apparently with very considerable success; though, it is alleged, sometimes with detriment. But I am not aware that any surgeon has yet applied it to ordinary surgical operations, with the object of preventing inflammation and suppuration, except myself. I propose to give briefly the histories of a few cases in which I have so employed the remedy:—

CASE I.—This was a lady of good personal appearance, who had a fatty tumour, the size of a walnut, just between the eyes, and extending nearly to the *canthi*. She had been deterred from having it cut for a year or two, because her physician said it would be followed by a scar. I was therefore very anxious to prevent suppuration if possible, a contingency almost sure to happen, under ordinary circumstances, in a cavity in a situation where it was almost impossible to keep the sides in accurate apposition. I accordingly determined to use *carbolic acid*; and—after the oozing had nearly ceased—applied freely, by means of a brush, a solution of the acid in glycerine and water, one part to three; the wound was then dressed with sutures, and covered with lint wetted with the solution (50 per cent. of acid) and a light compress. The next day there were redness and swelling; the third day this subsided, and the sutures were removed, the wound having healed throughout; and the fourth day she returned to the city; there is now scarcely a perceptible cicatrix.

CASE II.—This was the case of a female who had a neglected *paronychia* of index finger, which resulted in necrosis of the last *phalanx*. I made an incision over it, removed the bone, and applied the solution (one part to three) freely, and directed her to dress it with lint wetted with a

<sup>1</sup> This was true when the above was written, but just as the proof-sheets of this article are passing through my hands I find, by a recent London journal, that some English hospital surgeons were trying these experiments contemporaneously with me, and with great success. I find, also, that Mr. Lister had recommended to soak silk ligature in carbolic acid, to tie the vessels with it, cut the ligature short, and close up the wound. Mr. Maunder, surgeon to the London Hospital, has used this in one instance on the carotid, and with complete success.

solution (one part to twenty). Three days afterwards, I saw it, and there had been no inflammation. It healed well without suppuration.

CASE III.—Mr. S. had a *carbuncle* on the cheek already ulcerated, and spreading quite rapidly. The induration and tumefaction extended to the articulation of the jaw, beyond the base and angle, and upwards nearly to the *zygoma*; in fact, involving almost the whole of that cheek. To have incised this in the ordinary way, and to have applied the ordinary treatment, would have insured a disfiguring cicatrix of considerable magnitude. I accordingly determined to employ the subcutaneous method and the carbolic acid in conjunction. A narrow straight bistoury was passed through the small opening in the centre of the disease, and passed under the skin to a little beyond the outline of the inflammation, and an incision carried downwards entirely through the induration. This was done in four directions, making a crucial incision. A solution of solid *carbolic acid* in an equal part of glycerine was then injected into each incision, causing quite sharp pain, which soon subsided. The wound was covered with lint wetted with the same solution. Each day, for five or six days, the injection was repeated with a weaker solution; the pain never recurred after the operation, and within two weeks the part was soundly healed almost without a scar.

CASE IV.—A. J. was chopping wood with a very sharp axe, and struck the edge directly over the *patella*. It bled profusely, but it was bound up, and he was brought in a wagon, a distance of three miles, to my office. I found a clean cut some three inches in length, and beneath it a firm clot of such a size as to make a tumour as large as a small orange. This had checked the hemorrhage. I scooped, with the fingers, all of this out from under the flap made by the glancing of the axe, and then compressed the sides of the wound firmly against the bone (the joint was not opened) to check the bleeding. Dr. Murdock then painted the whole wound thoroughly with a solution of carbolic acid in glycerine (equal parts), and having carefully pressed out the muddy fluid caused by the action of the acid on the blood constantly oozing, I applied sutures and straps, then a compress wet with the acid solution; then a pretty firm bandage, and finally a guttered splint the whole length of the limb to insure quiescence of the joint. The application of the acid caused the most severe pain, but it passed off in a few minutes, and when patient left the office he stated that he was in less pain than when he entered.

To be brief, the patient rode home, and not the least appearance of inflammation was ever observed about the wound. On the twelfth day he was at his work in the woods.

CASE V.—This case has already been alluded to. It was a terrible laceration of the hand by a circular saw; a portion of the hand and two fingers were removed; the thumb was torn partly off at the metacarpal joint. Union by first intention was not attempted, but the carbolic acid solution (one part to two) was freely applied with the view of preventing inflammation.

*Second day.*—No heat, and but very trifling pain or tumefaction about the wound. The dressings have not been removed, but the solution has been applied over the dressings and allowed to soak through; there has been considerable oozing of bloody serum.

*Seventh day.*—Moderate suppuration, but very little swelling or inflam-



mation: No other dressing since the bandages were removed, but a light compress wetted with a weak solution (one part to twenty) of the acid. The wound healed soundly.

CASE VI.—Mr. W. applied to have a fatty tumour, measuring about three inches across, removed from his right shoulder. The operation having been performed with the assistance of Dr. Murdock, a solution of carbolic acid in glycerine and water (one part to three) was freely applied, the edges brought together with fine sutures of silk, the oozing fluid pressed out, a strip soaked in a 50 per cent. solution of the acid in glycerine placed over the line of junction, and finally a compress and bandage over all.

*Second day.*—No sign of inflammation, but complains of a severe neuralgic (?) pain running from the wound through and around the shoulder joint. Pressure upon the wound does not increase it. This continued several days, became periodical, and was finally relieved by large doses of quinia and hypodermic injection of morphia. The wound healed soundly, but to make sure that there was no concealed matter giving rise to the pain, the adhesion of the skin was broken up at one point, and a probe passed to the bottom of the wound; there was after this a slight suppuration in the limited portion of the wound thus interfered with, and water dressings were applied.

CASE VII.—See Case III. of the first series, on a preceding page of this paper.

CASE VIII.—This was a circular amputation of the leg (has already been alluded to in Case II., first series). The patient in a desperate condition from previous ill health, shock, and loss of blood; immediate amputation necessary to stop the hemorrhage. The surface of the stump was thoroughly brushed over with the ordinary solution of carbolic acid in glycerine and water; the edges of the integument brought together with sutures and adhesive straps, and a moderately tight roller applied, as there was a disposition to considerable oozing. The patient lingered in a doubtful condition for several days, vomiting almost everything taken into the stomach, and passing away almost everything injected into the rectum for nutriment and stimulation. He finally rallied, but the upper portion of the covering of the stump sloughed. There never was any sign of inflammation about the wound.

CASE IX.—See Case I., first series. Also V. and VI.

The success of the carbolic acid, in all these cases except the amputations, is certainly sufficient to warrant a further trial of the remedy.

Whether its application to *stumps* will be of any assistance in expediting union remains as yet in doubt. My experiments, so far, certainly do not present the plan in a favourable position for future imitation. But my cases were all, with a single exception, very unfavourable for a successful trial; and I still hope that future results, even in the case of stumps, may present the matter in a more favourable aspect. In every instance, however, the application of so severe an agent, instead of producing irritation and pain, as one would naturally expect, evidently mitigated, in fact almost annulled the suffering which usually follows for some hours the

dressings of large wounds on recovering from the anæsthesia. In the first amputations the solution was unnecessarily strong; the only inconvenience thereby occasioned being the apparent increase of oozing from the surface of the wound.

There is one case on record of the application of the silver ligature on the continuity of a vessel (the femoral) in the human subject, the wire being cut off and the wound closed up. I allude to Mr. Broadhurst's very interesting case, published in the London *Lancet*; and there is another, not on record, a recent operation by Dr. Stephen Rogers, of New York, in which Professor Howard, at his request, applied the silver wire to the femoral, cut it short, and closed up the wound. In both cases the operation was for *aneurism*.<sup>1</sup> It does not come within the scope of this paper, and would extend it to an undue length to detail these very instructive cases, for the particulars of which I am indebted to Dr. Rogers. But it is proper to remark that they both illustrate the importance of the principle partially established by Dr. Howard's experiments on animals—viz., that the compression of the coats of the artery, by a ligature of whatever kind, should not be sufficient to injure any of them, especially in cases where disease of the arteries is suspected. This principle has also recently been experimented on by Dr. Gurdon Buck, of New York, and, through his recommendation, by some of his friends. They have performed several operations for aneurism by means of a method of applying the ligature devised by Dr. Buck, which he intends, at a proper time, to bring before the profession, and which I am not at liberty to describe now.

COLD SPRING, Jan. 9, 1869.

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ART. II.—*Researches on the Physiology of the Cerebellum.* By S. WEIR MITCHELL, M.D., Member of the National Academy of Sciences.<sup>2</sup>

DURING the last six years I have at various times engaged in studying the difficult subject of the physiology of the cerebellum. Like most observers, my experiments have been made chiefly, but not altogether, upon

<sup>1</sup> Only quite recently, and since this paper was read, I have met with the record of another instance in which the silver ligature was applied, cut short, and closed up. This was the operation of Dr. Stone previously alluded to in this paper. He applied the ligature *loosely* around the *common iliac artery*. Everything, as far as the wound was concerned, went on well, and the man lived until the twenty-sixth day, when he succumbed to chronic dysentery, &c. (See *N. O. Med. and Surg. Journ.*, Sept. 1859.)

<sup>2</sup> The conclusions of this paper were communicated to the Biol. and Micr. Dept. hila. Acad. Nat. Sci., Jan 18, 1869.

birds, for the reason that these alone survive the ablation of the organ in question. I have gradually reached certain general conclusions as to the cerebellar ganglia, which differ from commonly received opinions, while as regards birds I shall be able to make probable a theory which in connection with some of my former researches must, I think, modify very considerably our notions in regard to the spinal and cerebellar functions of this important class. In order to clear the ground for the reception of my own theories of cerebellar activity, it will be necessary in the first place to examine briefly the older conceptions, a task rendered the more easy by the prevalent dissatisfaction with which they are regarded by most living physiologists. The foundation for my own opinions must rest upon experimental and other proofs peculiar to my personal researches, and also upon a wide general consideration and critical study of the clinical history of cerebellar disease. There are at present but two theories of cerebellar function which hold any place in the esteem of physiologists. The most popular until a few years ago was the conception which grew out of Flourens' researches, and which was due to that great observer. He held, as is well known, that the cerebellum is the sole organ in which are co-ordinated the muscular movements of the body. Every year has thrown increasing doubt upon this view, against which he himself furnished unanswerable arguments by showing that birds occasionally recover from the loss of the cerebellum, and in time have restored to them the co-ordinating power which for a period after the operation appears to be in abeyance. My friend, Prof. Dalton, has been equally fortunate in saving some of the subjects of his ablations of the cerebellum, and in seeing them regain entirely the functions supposed to depend upon its existence. The birds similarly studied by Lussana he describes as never recovering entirely their ability to use the muscles with certainty, but Dr. Dalton's observations are too absolute to admit of doubt, and, as we shall see, he is fully sustained by my own experiments. Moreover it has been repeatedly shown that in locomotor ataxia, a spinal malady, the co-ordinating power is remarkably affected. It is quite needless, however, to urge further these or other arguments, and they are many, against the view of Flourens. It is enough that clinical experience is against it, and that after loss of the cerebellum, the rare survivors of the operation resume in time the function supposed to be forever abolished with the destruction of the ganglion in question. The explanation of the undoubted disturbances of muscular action, which are seen immediately after cerebellar ablation, will occupy us at another place.

Certain modified forms of the opinion held by Flourens have been entertained from time to time by other observers. Thus Bonilland regarded the cerebellum as the centre which presides over equilibration, and allotted to the cerebellum the co-ordination of the movements of the eyes, speech, and mastication, rejecting the notion which relates this organ to the in-

stinct of propagation. The first part of his theory is more in accordance with facts than that of Flourens, but must be set aside upon the inexorable evidence afforded by the loss of the organ and the sequent symptoms.

Serres assigned to the middle lobe the function of excitor of the generative organs, and to the cerebellar hemispheres that of exciting motion in the members.

Wagner, at the close of an elaborate memoir, concluded, 1st. That the cerebellum is an organ exclusively motor for the muscular apparatus of animal life, and probably for that of organic life. 2d. That it has an essential share in the co-ordination of the symmetrical movements of the body, and notably in those of progression, while at the same time it cannot be regarded simply as a regulator of motion. 3d. That it may become the power of departure of a direct excitation (not reflex) of certain muscular apparatuses of organic life, particularly of the abdominal viscera, and especially of the genital organs, and probably of the heart. The first conclusion as to its exclusive motor function may at present be taken for granted; the definition of the method of interference (co-ordination) may be set aside as we have shown, and the last conclusion may be left to be dealt with when we consider the result of irritations of the cerebellum, only adding that with Brown-Séquard, I am of opinion that the relations of this organ to the apparatus of organic life require to be thoroughly re-examined. The last physiologist mentioned reaches as yet only negative conclusions, nor am I aware that he has anywhere expressed himself definitely as regards the absolute functions of the cerebellum. Still more recently M. Vulpian, one of the best experimentalists of the day, has confessed, like Schiff, his inability to assign to the organ any positive function, while he holds, with Flourens, as to the result of artificial lesions, and seems to consider, with Lussana, that deep lesions are never followed by recovery of function and perfect natural motility.

As to the authors who have assigned sensory functions to the cerebellum, little need be said, since by general agreement they are held to be totally without support, save, perhaps, the single view advocated by Lussana and Dunn. These observers, especially the former, accepted the results of Flourens' classical experiments, but explained them by the supposition that the cerebellum is the ganglion of muscular sensibility. Such a view would be competent in explanation of the facts, but is antagonized by a large mass of clinical experience, and by the complete restoration of all motions after destruction of the organ, a fact which Lussana does not admit.

Magendie seems to have had a conception of cerebellar activity which assigned to it an office quite trivial as regards its great size, but which had too long possession of the books to be passed over in silence. He regarded the corpus striatum as having a backward propulsive energy, and the cerebellum as possessing a reverse activity, there being in health a

physiological balance of control between the two, which was disturbed by the loss of either ganglion, so that the body was dominated by that which remained. In fact, mere puncture or irritation of the deep tissue of the cerebellum will often cause backward motion, the destruction of the organ not being essential to the production of this result. Besides which I have seen irritation of the medulla oblongata occasion it, and I have known superficial irritation of the back of the cerebellum to cause forward impulse, and irritation of the corpus striatum to occasion, though rarely, backward movement, so that Magendie's facts cannot be said to stand in undisputed simplicity.

Rolando held certain views in regard to the cerebellum which accord to some extent with my own. He held that it was, to use his phrase, an "electromoteur" in which was secreted a fluid destined to provoke muscular contraction. He adds, p. 417, that the cerebellum influences the intensity rather than the regularity of the muscular acts. I ought to add that as I have been unable to get his book, my quotations are at second-hand. Dr. J. Luys, in his excellent work on the nervous system, has given this view a larger development, and ably supported it chiefly by pathological evidence, to which I shall refer again. I do not know of any other author who has sustained this view by experimental arguments. I myself have for several years held and taught certain opinions which closely accord with those I have last mentioned, and which it is the purpose of this paper to develop. To avoid all possibility of misconstruction, I quote the summary of Luys's' views with which he terminates the physiological part of his chapter on the cerebellum.

"Il peut donc être considéré comme une source d'innervation constante et provisoirement, comme l'appareil dispensateur universel de cette force nerveuse spéciale (sthénique) qui le dépense en quelque point que ce soit de l'économie, chaque fois qu'un effet moteur volontaire ou involontaire est produit."

From this condensed expression of his theory it will be seen that Dr. Luys regards the cerebellum, if I mistake not, as an apparatus for generating nerve force to be used according to the wants of the economy in the production of motor power, whether voluntary or involuntary.

The opinion which I myself entertain will be better understood at a more advanced stage of this essay, and I shall therefore defer its consideration.

The experiments which I have made upon the cerebellum have extended over portions of at least six years. That I do not speak without a very large experience may be gathered from the fact, that during this time I have ablated the cerebellum eighty-seven times, and performed more than two hundred and sixty experiments upon the influence of irritants on this and adjoining organs. Within the last year and a half, since I introduced

into physiological investigation the use of extreme cold, made practicable by Richardson, I have added innumerable experiments to my older notes, and obtained results which, if not all that I could desire, are enough to tempt me to publish my conclusions.

Although it has been long recognized that, in studying the influence of injuries upon an organ, it is necessary to bear in mind the distinction between the phenomena due to loss of function, and those due to irritation, it appears to me that Brown-Séquard was the first to formularize this as a controlling law which should guide every physiological research. Its value in relation to experiments on the nervous system cannot be overstated, and had it not been too much neglected, there would have been far less confusion in regard to the symptoms which follow injuries of the organ we are about to study.

Bearing in mind the axiom above referred to, I desire, before proceeding further, to lay down certain rules of research, which should have a dominating influence in the present case, and which seem to me to cover the whole of the possibilities in the way of symptomatic phenomena.

1. When by disease or injury an organ is removed or destroyed, the process of destruction may give rise to irritations which react on distant organs, and occasion certain symptoms. These usually subside after a time, but where the injury to an organ is partial, and where any diseased process continues, as a cicatrix, clot, or softening, they may become permanent. Examples of this will occur to the reader too readily to require illustration.

2. The loss of an organ may give occasion to, or permit forms of activity in other organs, which the healthy influence of this one controlled, as when the cutting off of cerebral influence allows of increased development of spinal reflex activities.

3. The loss of an organ exhibits itself in some manifest defect of function, or if after the stage of irritation is over there is manifestly no loss, then we are driven to the logical conclusion, either that the organ had no function, or else that the functional loss is provided for by a gradual increase of similar efficiency in some other organ, which alone becomes competent to the whole office, and during health must have shared with the lost part its peculiar duties.

I have caused irritation of the cerebellum in pigeons, rabbits, and guinea pigs, by the following processes: by inserting a strong needle-like awl through the skull; by injuring the organ after trephining, or, in birds, after slicing off a piece of skull; by injecting into the cerebellum globules of mercury with or without a minute amount of persalts of iron to arrest hemorrhage; by freezing the part more or less, and allowing it to thaw so as to cause congestion; and lastly, by painting the exposed part with tincture of cantharides or other irritant fluid. I shall pause here only to detail certain consequences which are either exceptional or unnoticed by former observers. The ordinary mechanical irritations need no special

notice. Some of the results which follow other processes may be worth detailing. When in pigeons or mammals, I made a minute opening in the bone and injected with a syringe a globule of mercury into the centre of the cerebellum, it was usually followed by loss of steadiness of gait whenever the injection was deeply made, but if superficial the effects were slight or momentary, unless either the globule was very large, or the act was productive of hemorrhage; in either case death often ensued rapidly. In one case, that of a rabbit, I lodged a minute portion of mercury in the right side very profoundly. It gave rise to the longest continued *mouvement de manège* that I have ever witnessed. The animal rolled from the injured side, and unless guarded or supported, continued to do so during five weeks, when it began to acquire the power of walking without rolling, but was never able at any time during four months to move forward, all its locomotion being at first sideways and finally sideways and forwards. Then paralysis of both posterior limbs took place and was speedily followed by death. The site of the mercury was occupied by a clot surrounded by red softening, and the mercury had made its way downward to the base of the skull, and in spite of the most careful search, could not be found. In another case, the globule made its way forward and was found between the cerebrum and cerebellum. I presume that the great weight of the fluid used must be taken into account in explaining these facts.

I have already, in two papers, described very fully my own method of causing congestions by the use of Richardson's freezing spray, rhigolene being used in place of ether. The process has the one great objection of being difficult to limit, but is otherwise the only good method of causing profound congestion. Nothing in fact can be more perfect, as the whole part darkens visibly to the eye, vessels hitherto invisible appearing, and those which can be seen enlarging distinctly. The phenomena are probably from the beginning irritative in character, since the congestion follows instantly upon cessation of the spray, and goes on increasing in intensity as the part thaws, and the congestion spreads and becomes complete. So long as the freezing continues or is spreading, we may have suspension of function as complete as from ablation, but we shall hardly escape from some coincident irritation in the organ itself, or near ones at the extreme limiting edge of the chilled part. This objection applies alike to every mode of removing an organ or suppressing its function by local methods, while to none is there so little objection as to freezing, because as a rule the organ gradually returns to a state of health, and is not permanently injured. Sometimes the process employed occasions freezing of the medulla oblongata, when death at once occurs, as is also the case where for more than a moment the spinal cord is kept frozen in birds at any point above the dorsal vertebra. The results obtained by me from thus variously irritating the cerebellum or its peduncles, differ little from those seen by former observers. Where I have had reason to

differ from them in opinion, I shall speak most fully, and as briefly as possible on points where I am at one with them. The cerebellum of the bird seems to me less irritable to mechanical stimulus in its outer layers than that of rabbits, while I believe that in the guinea pig irritations nearer the surface are felt most remarkably. Simple mechanical injuries, needle wounds, etc., are very rarely fatal in birds or the mammals named, and occasion no lesions of special or general sensation. Contrary to Bernard's statement, I have not found digestion remarkably interrupted, nor have I seen any permanent intestinal troubles follow the operations. The motor functions alone suffer, and these are commonly re-established in their integrity within a period which varies from a few hours to ten days. As respects the form of these phenomena, consecutive to slight wounds, I have nothing to add to older knowledge. Superficial wounds, especially in birds, often occasion no visible symptom. Anteriorly and posteriorly deep irritations seemed to be felt as less profound ones are not, but although many authors have satisfied themselves that the animal then feels pain, I am not of opinion that this is certain. There is often a cry and a movement as the needle enters the deep posterior cerebellar regions, but apart from the difficulty of feeling sure that you have not disturbed the medulla, the movement may be due only to having entered a region which is an excitor of motion. Wounds of the deep lateral portions, involving the origins of the middle cerebellar peduncles, cause the animal to roll around on his long axis and occasion, as do most deep cerebellar lesions, very notable squints, although these are apparently wanting in birds so treated. Any mechanical irritation which is deep enough to give obvious effects, is sure to produce disturbances of motility, either tendency to move or fall to one side, or else general want of balance with abruptness and jerkiness of movement—phenomena which to my eye read as though there were a combination of weakness with excitation of muscles, in some cases lateral, in others general, but as I have said, these by degrees disappear, the rolling passing into a tendency to walk in a circle before perfect recovery occurs. The torsion of the neck and spine noted by others I have also seen. Quite as often in grave wounds of the posterior regions in birds there was a drawing backward of the head so as to produce an appearance of strut in the gait.

The very singular backward movements due to certain cerebellar injuries have been seen by me in many cases of cerebellar wound, but are not capable of exact reproduction at will by this means.

Magendie states that irritation of the medulla oblongata may also cause retropulsion, and Longet and others are inclined to believe that it is always due to some effect of the injury to the cerebellum having reached this organ. Flourens states that superficial lesions of the former body cause forward motion, and deep injuries backward impulse. I have seen both caused in succession by one and the same lesion of the posterior part of the cerebel-



lum. I am not myself of opinion that the backward motions, especially in birds, are due to accidental injuries to the parts below the cerebellum, or, at least, I am sure, not only that certain irritations, such as cold limited to the cerebellum, are competent to this effect, but also, I am sure, that in rabbits this agent applied moderately to the medulla oblongata through the occipito-atloid space, causes only general convulsions. In birds also, as I have shown, a large spinal region is competent to produce retropulsions. The forward impulse noted above also occurs sometimes after the application of cold to the cerebellum; but it is always the first movement, and looks like the wild effort of a confused animal at escape. It is promptly followed by retrogression, which has distinctly the appearance of an involuntary act, against which the animal struggles.

Brown-Séquard refers all the phenomena of this order to incidental mechanical interferences with the adjacent or subjacent parts, which he believes competent on irritation to occasion them. This might well be, and yet the cerebellum itself be also directly capable of producing, when injured, the same results.

The doubts which belong in this direction to mechanical injuries do not apply to congestions by the use of cold. The brain-case and skin being removed, a slight whiff of rhigolene, which barely freezes the superior and posterior cerebellar surface, causes backward motions, which cannot, I think, be referred to the parts below when we remember how difficult it is in birds (even by prolonged use of the spray) to freeze deeply. Such being the case, if we admit the correctness of this experiment, we may at once conceive it probable that many of the results of mechanical injuries have a just right to be considered as truly due to the cerebellum. Apart from this, I feel with Ollivier and Leven that in some of mine, as in their observations, it was impossible that the means used could have mechanically disturbed other tissues.

I have occasionally seen brief vomiting follow deep freezing of the cerebellum, but I have rarely observed it after simple wounds of this organ.

The ocular nutritive changes described by many authors as due to cerebellar injuries, I have frequently met with in rabbits and in guinea pigs, but never in pigeons. The change consists in slight opacity of the cornea, usually on the side possessing the most violent squint; whether the fixity of the ball of the eye in these circumstances may not possess some influence in causing this condition, is, I think, a question of some interest.

As regards the graver lesion, amaurosis, Wagner believes that it is always due in pathological human cases to pressure on near organs, as the tubercula quadrigemina, but as high an authority, Brown-Séquard in his notes on Wagner's paper, states, that he has collected sixty cases of amaurosis of one or both eyes, in many of which there could have been no such affection of near organs. I have not seen this symptom in animals even where I have thrown foreign substances into the centre of the cerebellum

to imitate clots, and where the animal has survived. Eleven cases lived after this treatment, but, although they exhibited more or less permanent lesions of motility and sometimes, though rarely, corneal troubles, I have met with no instance of loss of sight.

Certain other troubles, which follow ablation of the cerebellum, will be found referred to in their proper place.

Destruction of the cerebellum has been variously attempted, with a view to discover what functional deficiency follows its loss. The history of this portion of our subject has peculiar interest. Flourens, who removed the organ many times, inferred from the sequent symptoms of loss of equilibration that this was the co-ordinating centre, and the only one. In several instances, his animals recovered after loss of half the organ, which seems, however, to have awakened no suspicions on his part that his operation might have caused only irritative developments, which it was illogical to interpret as loss of function. In one case only does he report nearly total loss of the organ with recovery. He merely adds, that the cock lived more than four months and never regained his equilibrium, and this is the entire history there related.

Since then, several observers have ablated the cerebellum with intention to preserve alive the animal and observe the results. Longet failed in this purpose, and states that his pigeons died in three days always, and his mammals much sooner.

That an experimenter so able should thus fail indicates the extreme difficulty of the task, in which, however, Renzi in 1858, and my friend Prof. Dalton, in 1867, were more fortunate. The latter kept alive four pigeons, which had lost large portions of the cerebellum. His last case is the best, because there seems to have been destruction of considerably more than half of this organ. There was nearly perfect co-ordination at the ninth day when the bird was killed.

Wagner—1861—seems to have been ignorant of Dalton's results, and strangely enough of Flourens, since he states that no one has hitherto succeeded in preserving alive animals which have lost the cerebellum. Examining carefully his results, it seems that he nowhere claims to have succeeded in removing more than two-thirds by weight of the ganglion in question; but he states that complete atrophy of the organ sometimes followed, which accords with Dalton's opinion, who has shown that the white substance below the line of incision undergoes profound textural alterations. In Wagner's cases there was final and complete recovery of co-ordinative power. Lussana—1862—also obtained recoveries, but describes the animal as incompletely possessed of the power to direct its motions. The organ is said to have been annihilated. All of these authors believe that, in these cases, the cerebellum was in certain instances thoroughly destroyed. All of them describe the immediate results as want of power to use the muscles usefully, loss of equilibrium, and the like.

All of them tell us of the complete restoration of these lost powers, except in the case of Lussana, last quoted. Dalton distinctly affirms that there remained only some general feebleness, which accords with the statements of Ollivier and Leven, in describing grave lesions without ablation.

With this preface, I pass to the relation of my own instances of success in preserving pigeons alive after removing large portions of the cerebellum. I have been so fortunate, at different times, as to keep alive nine pigeons, from which large portions of the cerebellum had been taken away. One of these birds is now alive in my possession. In four, which were killed from two weeks to two months after the ablation, there was a destruction of the organ which I may call complete, since, although I had removed only one-half in three of them, the remainder was yellow, presented but few nerve cells or fibres, and contained in two numerous needle-like crystals of a pale brown colour. In the fourth I took away fully two-thirds of the part at first. In 1866 I preserved alive one pigeon after loss of half the cerebellum. It recovered entirely, but died suddenly at the thirty-fifth day. The remnant of the cerebellum was only partially disorganized, a portion at the back and left side appearing healthy. In 1868, the present year, one pigeon lived for three weeks, surviving all loss of co-ordination, except a certain awkwardness in using the beak. No. 7 of my series was operated upon June 18th, and died August 4th, 1868. In this instance the pigeon was subject throughout to fits of convulsive gyration, alternating with stupor. Notwithstanding these, the co-ordinating power improved materially until a week from death, when the convulsions became violent and frequent. I found a large clot on and over the relic of the cerebellum, and much softening of the posterior cerebral tissues. The 8th pigeon was operated upon July 18th, 1868. I made a left lateral incision, removing a slice of bone, but respecting the central line, so as to preserve the longitudinal sinus. Fully half of the cerebellum was scooped out, and then with a two-edged knife I broke up a much larger portion of tissue. The bleeding was considerable. The usual symptoms appeared. On the 20th the bird was better, but incapable of standing or flying. On July 26th my assistant, Mr. Landis, took the bird to the country, and there carefully watched it. The remaining notes are his:—

Arrived at Chestnut Hill July, 1868.

*July 26.* In same state as on arrival—utter want of co-ordination—strikingly and amusingly manifest when it attempts to eat. Strikes at the grain of corn four or five times, missing it sometimes by several inches—then looks up at bystander as if ashamed of its awkwardness. Generally stands still with head drawn down and backwards, often making a noise akin to a grunt. When he moves about it is generally by a shuffling movement.

*28th.* After a few grains of corn (by hand) he was let down, and almost immediately had several *well-marked and characteristic backward movements*. Then crouched with breast on ground for a short time, when he arose and fed himself as on July 26th. From back part of wound on the

head comes a watery fluid, showing under the microscope crystals. Was taken into the open air and sun for a short time, and flew a short distance. Is apparently strong, and his walk is improving.

*August 2.* Breathing somewhat oppressed.

*7th.* Walks quite well. *Can* fly, but does not often exercise this power. Is still awkward in feeding.

*13th* and *15th.* Changed for the worse. Cause'—thermometer ranging from  $65^{\circ}$  to  $57^{\circ}$ .

*17th.* Better. Some want of co-ordination when making violent efforts, as running fast, &c.

*22d.* Apparently entirely well; but a slight pressure on occiput will cause a temporary return to former condition. Flies perfectly well.

*28th.* Found dead with wound in neck—caused by cat or rats.

No. 9 was operated upon September 8th, 1868. A left lateral incision was made so as to avoid wounding the cerebral sinus. The piece of skull was lifted, leaving it attached at one edge by soft tissues, as the lid of a box is by its hinges. When bleeding ceased I replaced this slice of bone, which became firmly fastened, so that no loss of tissue took place. Half of the organ was scooped out and more destroyed by the free use of the knife, so much so that I had hardly a hope of the pigeon's living. Violent backward somersaults followed, and when in an hour these were over, there was feebleness and utter loss of power to effect any useful movement. Mr. Landis kindly took charge of this bird, and by great care succeeded in saving it. At the 18th day it was able to eat and drink, and could fly at the 30th day. At this date, January 15, 1869, it is in no respect different from its fellows, except that when pursued about the room it gives out sooner than others, and often quite suddenly, a symptom which exists in many of these cases, but which has a more peculiar value the further off in time it is seen from the date of operation. The latest sign of awkwardness was in a certain want of power to direct its beak. This Lussana also describes; and it is the slight and almost the only ground for his decision, that inco-ordination is permanent after ablation. It is possible that this difficulty may be due to a relie of the early motor troubles which affect the neck with some form of spasm, and which were remarkably conspicuous in the present case.

Before speaking more fully of the symptoms which follow ablations, it will be fitting to say something as to the precautions needed to insure even a rare and occasional success. As it has been objected by Schiff and others that the cerebral circulation must be greatly damaged by removing the cerebellum, I have, in some cases, made only a lateral or bilateral incision, slicing off the skull with a knife, and leaving a central bridge of bone, beneath which lay undisturbed the long sinus. In operating on the middle line, it is impossible to avoid dividing this vessel; so that death from hemor-

<sup>1</sup> Sudden fall of temperature seemed to me very often to bring about a fatal result after ablation.—S. W. M.

rhage is common. I have tried to avoid this result by the use of little clamps, actual cantery, etc., but have rarely succeeded. Practically, the pigeons which survived this method of attack presented no features of essential difference from those otherwise treated, so that in this matter the theoretical objection has no value. As convulsions of some kind always ensue, death from exhaustion is the next danger. This is avoided by swathing the bird in a bandage until able to stand, or until the fits are over. These are renewed very often by anything which causes sudden motion or struggle—as a loud noise, or the act of feeding artificially. It is best to operate when the bird has been lightly fed; and, of course, for some time the subsequent nourishment must be given grain by grain with the hand. As to this there is no trouble, since the power to swallow is undisturbed. Even on the first day the bird will usually drink of itself if the beak be put in water.

In Cases 8th and 9th I merely lifted the flap of bone, leaving it attached at one edge. When bleeding ceased, I replaced it, drawing over it the skin. Perfect union followed without loss of tissue. Usually no attention was paid to the wounds, which closed by membrane.

*Consequences of Ablation.*—Those which are immediate have been so well and so often described by abler pens than mine, that I shall be as brief as possible. Always, if the wound be a deep one, there are convulsions which have a character of lateral or backward activity. With these, which soon intermit, we have a confusion of movement which is quite indescribable, and lasts much longer. It has usually been described by authors as a pure ataxy, without loss of power—a want of ability to group together the various sets of muscles so as to effect distinct actions like walking or flying. The animal staggers, falls this way and that, beats the air fruitlessly with its wings, lifts one leg or the other, and, in a word, exhibits what is truly described as an apparent want of co-ordination.<sup>1</sup> This is one way of reading the phenomena before us. There is, I think, yet another. If we conceive, as we have every right of evidence to do, that the cerebellum is in some kind of relation with nearly all the voluntary muscles of the body, we can see how an irritation which embraces in one plane all of the nerve fibres may give rise to irregular muscular motions, whose persistence will be limited only by the length of time during which the irritation continues. It is clear that nothing is more likely than that we shall have elicited a confusion of muscular replies, which, for a time,

<sup>1</sup> Flourens has noticed the likeness between alcoholic intoxication and cerebellar loss. In the early stages of drunkenness in birds, there is, he says, a perfect concord of symptoms with those seen immediately after ablation of the cerebellum; whence he concludes that alcohol acts on this organ, but finally affects the ganglia of sensation and intellectuation. (*Rich. Exp. sur le Syst. Nerv.*, p. 401.)

It is, perhaps, hardly worth while to add, that I have found alcohol to cause in birds deprived of half or more of the cerebellum exactly the same symptoms as it does in uninjured birds.

will interfere absolutely with the usually dominating influence of the volitional centres.

Ablation of the cerebellum is therefore equivalent, for a time, to extensive irritation of the organ, so that we have a graver reproduction of the symptoms which follow mechanical injuries, and which are severe in proportion as we incise the deeper parts of the organ. As we recede from the time of the operation these evidences of irritant action subside, until they are reduced to a minimum, or disappear altogether in the rare cases which survive the primary results of so terrible a traumatic lesion.

It is worthy of notice that during recovery the disorders due to irritation are often reproducible by noises, alarm, or rough handling—by any cause, in a word, which gives rise to abrupt movements or excited circulation. Under such circumstances the pigeon has some disorder of movement for a few moments, or at the beginning of a train of movements. Presently, however, this subsides, and the co-ordination is perfect again. The only permanent change which I have seen in pigeons is one, as to which I am personally quite confident, but which does not admit of absolute demonstration. All of the birds which have survived a long time seemed to me to be incapable of as prolonged exertion as their uninjured fellows, and to become tired far more readily. This point has more importance than it would seem at first to have, as it bears somewhat upon the ideas which I shall develop as to the function of the normal cerebellum.

Some of the symptoms which follow ablation may be considered here.

Vomiting is not rare, but I have not seen it later than the second day, and it is curious to note that it followed only one case of those which outlived the operation a week. This fact alone would incline me to suspect that it is always due, when it does occur, to injury of the sub-cerebellar regions. I have already mentioned that digestion does not seem to suffer in lesser irritation of the cerebellum; neither does it remarkably, I may add, after ablation of that organ. Corn placed in the crop leaves it in the usual time, and the birds emaciate less than would seem probable, considering the primary loss of blood, the confinement, and the artificial feeding. None of these, however, account fully, to my mind, for the singular diarrhœa which follows ablation, and persists for a week or two.

If we admit the constant interference of the cerebellum in the motor activity of the muscular fibre of organic life, we may conclude that the diarrhœa is due to a succession of irritations affecting the motor tissues of the alimentary canal; but it should also be remembered that both Wagner and the author have seen loose evacuations as a result of cerebral ablations. Moreover, it is not yet clear whether the watery discharges in question owe their character to alteration of the intestinal or the renal excretions, both being discharged from a common cloaca.

The negative signs which follow recovery are also of interest; excepting

some want of power to prolong exertion, there is left no locomotor defect. In the region of sensation no alteration may be perceived, and in the sphere of emotional activities I have been unable to detect any change, as the pigeons bill and coo, and do fierce battle like their healthy fellows. The question as to the influence of the cerebellum upon the generative organs has been pretty fully answered in a negative direction. I have no new facts to add to those of Wagner, Flourens, and Lussana.

The relation of the cerebellum to the generative organs is naturally connected with an influence which many suppose it to have over reflex movements, and especially over those which belong to the muscles of organic life. Brown-Séquard thinks, very properly, that it is necessary in this matter to repeat these experiments, attentive to the fact that impeded respiration, as he has shown, is apt to give rise to vigorous motions in the intestines, womb, etc. Now, in pigeons, such researches will be likely to have this element of doubt thrown in, because it is very difficult to open the belly without injury to the air-sacs, and consequent defect of aëration. Even in rabbits or guinea pigs, large opening of the abdomen disturbs breathing by taking away from the diaphragm some of the normal elastic pressure of the intestines, which aids the upward movements, so that, although it seems easy to expose the intestines, etc., and then irritating the cerebellum to see if they move, it is by no means always possible to affirm that the sequent motion was truly a muscular reply to the cerebellar injury, and to this alone.

Bouilland and others have assured themselves that many at least of the partly reflex acts are undisturbed. To these belong deglutition and respiration, the influence of the loss of the cerebellum upon the circulation being still in doubt.

I have reserved to this time a review of the very important results obtained by the application of intense cold with Richardson's spray producer. At the risk of being tedious I shall venture to recapitulate the conclusions of my former papers, and the modifications which they have undergone.

During the spring and summer of 1867 I discovered that when the spine of birds (pigeons) is chilled anywhere above the dorsal vertebræ certain results follow; if the freezing be perfect and prolonged so as to act through the spine, death from asphyxia occurs just as if the spine were divided. This is due to the fact that the respiratory nerves come off all through this region, and is in accordance with older knowledge. Slight freezing causes gasping respiration, and great confusion of general motion, a hurried rush forward, sometimes general convulsions, with violent backward somersaults, and finally spells of curious retropulsion, alternating with stupors, and like all the former symptoms, less violent after chill of the lower cervical vertebræ than from like injury of the upper region. The experiments vary a good deal, but in many the wild confusion of move-

ment and the loss of equilibrium with the apparent retention of a large share of usual power, all brought to my mind the cerebellar lesions I had so often seen followed by like phenomena. I also found that freezing of the cerebellum gave me precisely the same effects. I next discovered that direct irritation of the cervical spinal cord with irritants (capsicum) occasioned the backward spells after some hours, and the influence of the irritants proved more permanent than that of cold. At first I hoped to destroy for a time by freezing the influence of the cerebellar ganglion, but it is now clear to me that all the phenomena of action are due to the congestion which cold secondarily occasions, for it is impossible accurately to preserve the limits of the freezing, and so in the cerebellum we shall have a plane of varying congestion at the far line of the congelation. Also both here and in the spine, the motor phenomena are often delayed for a minute or more and then go on increasing in severity for a time. All of this is explicable if we comprehend that even while the freezing lasts there is probably a plane of irritation at the edge, that this speedily widens when we stop the spray, and that it quickly pursues the retiring line of cold as the re-established circulation passes by degrees into a congestion so profound as often to cause minute apoplectic effusions. Very little, then, of the convulsive acts is due to the direct effect of cold, much more to the intense and overpowering congestion which in turn wears off. The added proof lies in the fact that local irritants which congest more slowly, occasion in the spine the same phenomena after the lapse of a longer interval.

In the following summer I made the more curious discovery, that cold applied suddenly to definite tracts of skin in pigeons gave rise to precisely the same retrogressive movements as if I had frozen the correspondent spinal regions. More strange still, when I froze the left or right side of the crop, the pigeon walked to the side opposite to that frozen. All of these movements followed the freezing at intervals as long as five to ten minutes, and sometimes failed altogether. Here, then, was a resemblance to the facts of cerebellar lesions which was certainly calculated to startle the modern physiologist. I should perhaps state at this point that all of the phenomena in question have been verified by Dr. Richardson and others.

Up to the last summer, that of 1868, the only time of the year when my daily business permits me to pursue physiology, I had referred all of the curious co-ordinated spasms, as well as the other appearances of loss of equilibrium, convulsions, etc., to the cerebellum. In June and July, however, I took up anew the question of cerebellar functions, and discovered to my surprise that after my pigeons had lost part or the whole of the cerebellum and recovered, they were still capable of exhibiting in perfection the retrogressive acts, backward convulsions, and lateral walking. Other irritants applied to the spine gave also the usual results, so that it



became clear that I had been mistaken, and that the cerebellum was not needed to produce the phenomena I have described.

I made many efforts to irritate the lateral columns of the spine to cause lateral motion, but always failed to attain my purpose. If I could have kept alive a pigeon after dividing the spine in the neck, and then have frozen the portion below the section, I might have been successful in proving absolutely the independent possession by the spine of certain cerebellar properties. I endeavored to do this by keeping up artificial breathing after such sections, but was defeated by various obstacles which will occur to every biologist.

There is another fact which lies in the same direction as many of my own, and is of great interest in this connection. Brown-Séquard relates that when in the lumbar enlargement of the spinal cord of birds, he exposed to the air the gray matter which there lies externally, a curious disturbance of movement immediately followed, and was not observed elsewhere in the spine, at parts whose white neurine alone lies outside according to the common arrangement. The disturbance, he says, "very much resembles the so-called titubation, which exists after either the removal of the cerebellum, or the section of muscles of the posterior part of the neck." As I have shown, however, deep freezing higher up occasions the most profound confusion of motion, because the congestion in this case reaches the gray matter easily.

In the light of all that I have previously pointed out, I shall now review the question of cerebellar function.

We must admit, in the first place, that apparent loss of co-ordination follows cerebellar lesions. It appears clear from my own researches, that these injuries do not cause this result, owing to mechanical and incidental affections of near parts.

In birds, injuries and congestion of the spine give rise, at first, to seeming in-coördination, or at least to exactly such phenomena as follow like injuries addressed to the cerebellum. When the cerebellum has been removed spinal irritation still continues to evolve the same symptoms as when the cerebellum exists untouched. These facts indicate for these two organs in birds at least, a curious community of pathological symptoms and probably of physiological function. If then there be such a functional entity having a separate seat as the so-called co-ordination, it belongs in birds to an extensive region, including the cerebellum and a large part of the spine.

There is yet possible, however, another view of cerebellar activity which will accept all of the facts and account for all. Let us suppose the cerebellum to be a great ganglionic mass, possessing the same motor functions as the gray matter of the spine, related like it, and through it, to the voluntary muscles. Irritations of its tissue, ablation, the temporary equivalent of extensive irritation, congestions, as from cold or other causes, might

occasion both directly through the spine, or indirectly by reaction on its ganglia, just such confusion of motion, restlessness, and locomotor disorders, as we do actually see and as were said entitle it to be called the organ for co-ordinating muscular acts. As the irritation disappeared, so would the muscular disturbances, until, when there was no longer irritation, there would cease to be locomotor difficulties of the character described, the spinal centres having by degrees assumed with the aid of the will the function shared in health with the lost organ.

Referring anew to laws of research laid down at a former page, I remind the reader, that if an organ be lost, and no function *finally* disappears, it either had none or possessed one in common with some part which remains uninjured and capable of at last supplementing the function of the destroyed tissues. For these reasons I am disposed to deny to the cerebellum any larger share in co-ordination than exists in any ganglion employed in voluntary motion, and to assign to it a part closely relating it in powers to the chain of spinal ganglia. The cerebellum becomes for me, therefore, a great reinforcing organ, capable of being more or less used in volitional muscular motion. Its loss, as I have elsewhere stated, leaves finally no functional defect save some incapacity for prolonged motor activity.

The apparent in-coördination which follows section through the deeper layers of the cerebellum, is simply a confusion of movement due to the joint action of two separate and interfering agencies. In health the cerebellum is called upon by the will when needed, and acts through the spine on the muscles. After irritation or ablation (the equivalent, for a time, of extensive irritation), we have two sets of forces in action—that arising from the excited and wounded efferent cerebellar fibres, a force inconstant, irregular, involuntary; and secondly, the normal activity of the will, which, in presence of the former disturbing power, fails to evolve the usual orderly reply from the muscles. The general result is seen in the strange confusion of movement which is so familiar to the physiologist.

I am very far from supposing that what I have here urged as experiment or argument is at all complete. I am well aware that much may be said against my views, and perhaps something more in their support. It is clear, however, that as yet we have had no cerebellar theory supported by any weight of experimentation. The theory which I have here set forth may or may not be correct, but it seems to me to have more in its favour than any other yet advanced. Should it meet with no success, it will still be impossible to frame any consistent hypothesis of cerebellar activity which does not account for the new facts in this connection which I have published; so that if these have been well and honestly observed and stated, I shall not have laboured altogether in vain.

I ought to add, that while I believe the cerebellum to be one of the great centres of force-development for voluntary, and perhaps involuntary motion, I am not at all prepared to assume that it has no other function.

Whatever quarrel may be made with this argument as regards mammals, it seems to me quite clear that, in birds, a relationship of function with that of the spine is fairly made out, even if we hold to the older views of the co-ordinative powers of the cerebellum, a doctrine which I am quite indisposed to admit. While in birds, then, there is great reason to induce us to accept the view previously stated, and which would teach us to look upon the cerebellum as a great additional centre of motor power, called into habitual activity by the will, and co-operating with the spinal ganglia, there is nothing in experiments upon the cerebellum of mammals to contradict such a theory. Irritations of the cerebellum in this class occasion exactly the same kind of motor disturbances and irregularities as in birds. Ablation productive in mammals of primary symptoms in nowise unlike those of birds, ceases here to offer us further proof, because, as yet, no one has succeeded in saving the life of a mammal deprived of the cerebellum.

I ought also to add, that I have found it impossible to cause by cold addressed to the spine of mammals those phenomena which are seen in birds upon so disturbing either the spine or cerebellum. For this reason many will perhaps hesitate to admit in mammals that community of spinal and cerebellar functions which I have made at least not improbable in the class of birds. Nor would there be anything to shock us in such an admission, because in the lower animals many functions are disseminated over large regions which in higher creatures are centralized, so to speak. This is well enough illustrated in the frog, which, after decapitation, executes many and complicated reflex acts with entire co-ordination, despite the absence of brain. There is therefore no doubt that the reptile class possesses, in a larger degree in the spinal regions, motor powers, which in higher classes exhibit themselves only under the influence of intra-cranial ganglia. The physiological gap between birds and their next higher neighbours in the ascending scale of life is a very wide one, so that if that were in a measure true of birds which proved not to be of mammals, it need excite no great surprise. I mentioned, early in this paper, that comparative anatomy gave us little aid in determining the cerebellar offices. On the other hand, comparative experiments upon animals below the class of birds, seem to afford important additions to the evidence already offered that the cerebellum is principally a motor ganglion supplementing the group of spinal nerve cells, and like them dominated by volition. I found it needless to experiment as to the cerebellum in frogs, fish, etc., since this had been already fully done. Thus, as Vulpian points out in frogs and fish, removal of the cerebellum alone produces no noticeable symptom, unless the peduncles have been injured. In these classes the organ is relatively small, and we may presume, if for a moment we accept my views, that the spine is largely predominant in the ordinary product of motor power, so that ablation of the cerebellum causes in these animals less than

any that disturbance of movement which comes from irritating a vast number of motorial fibres.

It was at one time my intention to examine how far the pathological evidence in man would sustain the view of cerebellar function which I have, with many doubts, brought forward in the absence of any one more probable. After studying with critical care a large number of cases of cerebellar lesions, I found that very few of them could properly be used, owing to there having been no microscopical inspection of near organs. We have numerous symptoms, some of which at least we cannot reproduce by artificial injuries. They may be the legitimate offspring of the cerebellar disorder, but since they may also be due to affections of the medulla oblongata or optic ganglia, etc., we have no right to feel sure that these latter organs are not the true parents, unless they have been examined by every possible means. On the other hand, while many of the phenomena of disease are also seen in some modified shape in the laboratory, it is well to remember that, nearly always, disease acts slowly, giving us rarely those trenchant results which follow the abrupt interferences of the physiologist's scalpel. I may say, in conclusion, that after analyzing an hundred cases, Luys tells us that progressive muscular feebleness was noted in forty-five. I myself have reached nearly the same result from the study of cases other than his, and I feel at least authorized to say, that while for reasons above stated the cerebellar pathological evidence is inconclusive, it is more in favour of the views I have set forth than of any of the precedent theories.

In conclusion, I desire to express my warmest thanks to my assistant, Mr. Landis, without whose ingenuity and care I certainly should not have been able to preserve alive any of the recent subjects of attempts at cerebellar ablation.

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ART. III.—*Notes in Regard to the Question of Priority in the Use of Weight Extension and of Extending Adhesive Bands.* By EDWARD HARTSHORNE, M. D., formerly one of the Surgeons to the Pennsylvania Hospital.

IN the last number but one of this Journal (Oct. 1868, p. 585) the question of priority of invention as to weight extension in the treatment of fractured thigh is alluded to, and credit justly given to Dr. Wm. C. Daniell, of Savannah, Georgia, as the first one known to have resorted to the method in this country. The history of the weight extension treatment in the United States, so far as recorded, is given in an interesting and well-written paper by Dr. Jas. Tyson, of Philadelphia, and published in this journal (Oct. 1864, p. 328) just four years previously to the above

date. In Dr. Tyson's article, although aware of the previous knowledge of weight and pulley extension among the readers of the older European writers, he did not propose to go further back than the earliest date of publication in America. This he attributes to Dr. Luke Howe, of Jaffrey, N. H., whose account made its appearance in the *N. E. Journ. of Med. and Surg.* for July, 1824 (p. 229). Dr. Howe, we find upon reference, mentions the use of the screw by Hildanus and later surgeons, and thinks that extension "by so simple a method as suspending a weight" must have been known to "ancient surgeons," "but we have no history of such extension being made in connection with counter-extension in such a manner as would promise success." He then relates two cases, one a boy of twelve years, the other an old lady of seventy-four, in which he tried the plan successfully, the first trial having been made in Oct. 1823.

Dr. Daniell is second in order of publication, his date being Aug. 1829 (*Amer. Journ. Med. Sci.*), although his first case was treated in 1819. He not only gives two cases, but illustrates his report with an engraving of the patient under treatment. Dr. A. L. Dugas, of Augusta, Georgia, is the third of the American writers on the subject noticed by Dr. Tyson. In his paper, which is so recent as 1854 (*Southern Med. and Surg. Journ.* for Feb. 1854) he gives no case but describes his arrangement.

Dr. Gurdon Buck, to whom we are certainly indebted for the revival, or rather the actual establishment of the practice, is in reality at least the fourth in succession of its advocates in the United States (*N. Y. Acad. of Med.*, March 20th, 1862), Dr. Tyson being—with the exception of an allusion to Dr. Buck, with a wood-cut, by Hamilton in his work on Fractures and Dislocations (p. 402, 1863)—next to him in date, and quite equal to him in fulness and precision of detail and intelligent illustration of the treatment and its excellent results at the Pennsylvania Hospital, although acknowledging Dr. Buck as the author of the improvement as then adopted at the New York Hospital.

I am not surprised at the good opinion of the method expressed by Mr. Erichsen; or at the pride taken by Mr. James in having successfully employed it many years ago, and having described it and urged its practical superiority in his excellent address to the British Provincial Medical Association in 1839 (*Trans. Prov. Med. and Surg. Assoc.*, vol. viii. p. 214, 1840). The truth is that there seems to be a cycloid order of progress in these matters of surgical instrumentation, as in many other questions in art, if not in science. Improvements of undoubted merit, often of great practical value, seem to come and go and glimmer before the professional eye from generation to generation; and then, after being repeatedly proposed, and successfully employed or rejected, neglected or forgotten, although formally recorded, the due time comes at last for them to take a permanent place among the established things of therapeutics.

Some extended researches, in which I have been recently engaged for

another purpose, have brought to my notice an interesting effect of second hand quotation, and of erroneous compilation, in the European history of weight extension, which does not appear to have been noticed either in Edinburgh or London. The fact is that the first European writer—out of the Continent, at least—who definitely speaks of this mode of treating fractured thigh, and gives an unmistakable picture of the weight and its earliest accessories, is John Bell (*Principles of Surgery*, 4to. ed., Edinburgh, 1801); and he evidently does so without the slightest idea of suggesting anything new, although what he did present was, so far as the weight is concerned, the product of his own active and brilliant imagination.

Dwelling upon the long splint of Desault, and referring to the thigh cases with screws, ratchets and so on, of Gooch, Aitkin, and others of his day, he expresses in his strong way (*op. citat.*, vol. i. p. 590) his "poor opinion of these engines with which patients have been tortured;" while "unwilling to withhold from his pupils the knowledge of whatever has been invented by old or modern surgeons." He gives a description of a "machine" (simple thigh case) invented by Hildanus "for restraining the contraction of a broken thigh," quoting the case in the original Latin at the bottom of the page (Hildanus, *Obs. Chirurg.*, Cent. V., Obs. lxxxvi. p. 475), and translating it briefly in the context above; and refers to the engraving "at the top of this chapter" (xiv., *op. citat.*)—omitted in Charles Bell's edition of 1826—which is certainly a faithful copy from Hildanus. This he regards as the prototype of all the other so-called inventions, giving us an amusing picture of the reclamation quarrels of the several authors "anxious to be considered the original inventors." "Their mutual accusations," he tells us, "are, after all, but a verification of a good old proverb which we need not repeat; Aitkin has, in fact, stolen from Gooch, Wathen from Aitkin, and all of them have stolen from Hildanus; no wonder, then, they found out each other's thefts." (p. 596.) "The machine of Hildanus has an antique simplicity, while those of Aitkin and Gooch have a most scientific complication. From the slight variety we find among these machines, one would really believe that the variation of a few screws, knobs, nails, and buckles, as fairly constituted a new machine as a new preface constitutes a new book." (p. 596.) He further reminds his readers that, as Hildanus shows by his drawings that he was familiar with the use of screws, we must, at all events, go back to him for the so-called new inventions.

These unmerciful strictures of the famous Scotch champion of Pott's method, if they do not afford us an equally graphic sketch of the bickerings of our own times, may at least remind us of more than one machine which has been largely paraded as a "new invention" in these latter days, which savors very strongly of the various bantlings of these subjects of the eloquent professor's wrath.

But the object of the Edinburgh surgeon's greatest detestation was the "permanent extension" of Desault, as claimed by the latter to the exclusion of "his immediate predecessors and contemporaries." He had already described, with respectful notice, as useful on several accounts which indicate his appreciation of its practical value for retention, what he calls the "long splint of Duverney"—so named "not because it was peculiar to him" or to his contemporaries alone, "but because he used it of that uncommon length that it was almost a stilt rather than a splint, extending not merely along the fractured limb but along the whole body," and "reaching almost from the armpit to some distance beyond the heel." Duverney did pretty well by carefully bandaging his long splint (of "thin board or band leather") along the limb and body from heel to waist, and letting its upper rim into a folded towel which was fastened round the chest; but Desault "never did accomplish" the extension which he claimed. "If the bands were thus tightened from time to time," says Bell, "it is a fair logical conclusion to say that they were slackened from time to time."

Surgeons, however, "did at last fall upon a method which absolutely insured the permanent extension; for being wearied with this perpetual turning of screws to tighten the bands round the ancle, they at last most happily thought of putting a pulley to the foot of the bed, and hanging a good jack-stone to the heel. I have (in the next page) drawn the bed, the surcingle or horse-girth for the body, and the jack-stone of Hildanus for hanging to the heel; and according to my poor conception, the method of permanent extension was by this rendered so perfect that M. Desault could do nothing but disgrace himself by attempting any further improvement. Every step we proceed in this history weakens the plea of Desault to originality, and, what is more important, demonstrates the folly of all such attempts. If this be not an anticipation of Desault, if this girth do not 'prevent the body gravitating towards the fractured limb,' if this jack-stone do not 'prevent the limb being retracted towards the body,' there must be something in the theory and practice of M. Desault passing all comprehension." (Edin., 4to. ed., vol. i. p. 609.)

John Bell must have read Hildanus more or less, for he copied the bed and surcingle which are represented by Hildanus on a page (482) at some distance from that (p. 479) on which a wood-cut may be found which suggested the idea of a jack-stone to Bell, and of a weight to Heister; but Bell must have drawn upon his memory without either Hildanus or Heister before him, and with the impression of Heister only on his mind, since there is no weight whatever given or described by Hildanus, and only a metallic weight by Heister; nothing like a jack-stone such as Bell depicts (in the original edition) with his characteristic skill, albeit not "hanging to the heel." The truth is that Hildanus only speaks of the muffles or system of pulleys, which he ascribes to Ambrose Paré, and which Paré claims as his—"Nostre mouffles"—being excellent in his hands for maintaining pro-

per extension in fractures. Paré had already recommended (in his later editions) the use of his muffs in reducing fractures as well as dislocations, and for retention purposes in treating oblique fracture of the thigh (*Œuvres complètes d'Ambroise Paré, par J. F. Malgaigne, tome ii. p. 322*), and had given representations which Hildanus referred to and copied on a larger scale. It was the omission by the latter author to represent the whole instrument in actual use as attached to the broken limb, that has led to the mistake, in the first place of Heister and subsequently of Bell. This will be seen at once on examination of the original wood-cut in the work of Hildanus, and by comparison with the description and accompanying text. Our view is still more strikingly confirmed by the picture of the pulleys, as applied to the extension of a dislocated arm, in the full-length figure on the page (483, *op. citat.*) directly opposite to the bed and surcingle. Hildanus describes the pulleys of Paré, along with a counter-extending instrument of his own which he terms a *Remora*, and a "Cingulum" or belt for the thigh to connect with the extending power; and represents the three together as constituting an apparatus preferable to all others in the management of fractures and luxations. What Heister mistakes for a weight, but neglects to describe as such, is marked G in the picture of Hildanus, and is called by him "*instrumentum trochleatum.*" "*Notatum,*" he warns us, "*ut extensio quemadmodum dicam postea si quis tamen cingulum tibiæ circa talum adaptare voluerit, errabit. Verum tunc laqueum ita brevem esse convenit ut ipsius extremitates sub planta pedis conjungatur.*" (*Ib.*, p. 479.)

After bestowing ample praise upon his predecessor, Paré, as the first author to propose the employment of this *instrumentum trochleatum* in the treatment of fractures and luxations, he enumerates the superior advantages of his particular combination, under five different heads. (*Ib.*, pp. 479-80.)

In the first place it is applicable to all parts of the body, including the spine, except the ribs, clavicles, sternum, and pubic bones. 2d. It draws in a direct line, when properly applied to the upper and lower limbs, and in different parts, according to the seat of fracture. 3d. It is entirely under the control of the operator, which, in his experience, is hardly the case with the glossocomes and similar machines. 4th. It is small and portable, the whole instrument used by him for many years not weighing more than thirty-five ounces. 5th. It is not terrifying to the patient like the glossocomes and other machines of ancient use, and which are hence objected to by Oribasius and others.

Heister (seventh Eng. ed., 1763, vol. I. Book 2, Chap. 8th, p. 146) in quoting Hildanus as having "described an instrument (Cent. 5, obs. 86) proper for extending thighs which are obliquely fractured," remarks "there is yet great room to doubt of its fitness for this kind of fracture, for he does not, that I know of, supply us with any instances of extension as happy cures that have been made by the instrument. But till we have a more proper



machine contrived, and when other means are not found of themselves sufficient, it will not be amiss to use the fore-mentioned instrument of Hildanus, or when that is also of itself insufficient, to add the straw-pad, the large four-headed bandage and the rest of the apparatus described by Hildanus." The picture which he then gives (plate 8, fig. 17) is erroneously copied, not as a portion of the cylinder covering the muffs at one end, but as a short cylindrical weight. It is, however, referred to in the letter-press description on the following page only as "the extending power." Heister's inattention, therefore, and want of faith led to the first mistake, while John Bell's haste and his determination to annihilate Desault led to the second and final one. Prejudice seems to have blinded each of these great luminaries; and their authority—or the usual indifference until the full time comes—seems to have kept all of their successors in similar darkness.

It is curious that Mr. James informs his readers in the printed copy of his address (as he has again more recently in his note to the *Lancet*) of a communication from Mr. Syme, of Edinburgh, in which he is apprised that Hildanus had used the weight and a pulley; "and on reference," says he, "I found that this was the case, so that neither M. Josse [of Amiens, who had proposed (*Mélanges de Chirurg. Prat.*, Paris, 1830, p. 27) a plan of fixing the foot of the shortened limb to the foot of the bedstead, and then elevating that end of the bedstead, thus effecting permanent extension by the gravitation of the body] nor myself is entitled to the credit of the mode of treatment." "In recommending it once more to public attention," he continues, "there is the satisfaction of knowing that this may be done on higher authority than we can pretend to boast of, and if the *multa renascentur* applies against our claims to originality in this respect, we may, nevertheless, have a right to hope that the old plan may be revived with advantage." (*Op. citat.*, p. 215.)

Mr. James prefers his plan as "more suitable" than the "rather coarse mode" of Hildanus, the objection to the roughness of which he supposes to have been "not improbably" the cause of its long and entire abandonment. "Fixing the upper part of the body by what he calls a remora, he simply applied a vinculum, with cords and weights attached round the thigh just above the knees, which must have occasioned an almost entire stoppage of the circulation if any weight were used adequate to the occasion, and no means of supporting the vessels below by a bandage seem to have been used." (*Op. citat.*, p. 216.) This quotation, in which he makes a very just objection to the supposed method of Hildanus, shows that he must have read the author more accurately than John Bell in order to obtain his description, but with the haste and foregone conclusion that had led his predecessors to their misinterpretation.

The truth is, that Mr. James is entitled to more credit and higher authority than the older writer whom he was willing to defer to; inasmuch as he had not only contrived a better plan and tested it repeatedly

on his patients, but he had given an ample exhibition, rightfully claimed as his, of the "principles on which the superiority of the method to more fixed extension depends;" which question of principle, so far as he was aware, had not been mooted by any one at that time. The idea had indeed been presented in strong terms by John Bell, but only to decry the whole theory and practice as "rampant surgery," and to deter his followers from making the application with proper apparatus. It remained for Mr. James to do this good work with a success which was conclusive; and to give the history of his experience and his own independent view of the rationale of the treatment, in urging its adoption upon his fellow surgeons, long after the tirade of John Bell had been forgotten. For this he is surely entitled to more honour than either of the "authorities" which have been supposed to have forestalled him on his side of the Atlantic. On our side of the ocean, however, several were before him in the trial and description of still simpler forms of the same resort to the jack-stone, and with apparently equal ignorance of the demonstrations of Hildanns, Heister, and John Bell.

The seventeen cases so well elaborated and represented by Dr. Tyson are sufficient to show the success of the simplest form of "jack-stone" extension as employed at the Pennsylvania Hospital, where it has now become the established method. My own observation of these cases, and of many others, has thoroughly convinced me of the absolute truth of John Bell's assertion as to the completeness of the treatment, in a still more simple form than even he had dreamt of. The only weight arrangement needed for extension is a bag of shot, a bottle of water or a few bricks, attached *so as to hang clear of all friction* by an inextensible cord passing over a smooth-edged foot-board or chair back, or a fixed pulley, and connected with the limb through the medium of the customary adhesive strips. The only counter-extending force required is the simple resisting and retaining power derived from the weight of the patient's body, and its position on the mattress.

If side splints or other retaining fixtures are thought necessary, instead of sand or bran bags, they should be of the simplest character, and retained in place by separate strips of bandage around the body and along the limb—*no inside bandage being used*—the outside splint being always long enough to reach, like the "long splint of Duverney," from beyond the heel to the thorax, so as to fix the whole limb, including the pelvis. For this purpose the simplest, most convenient and most effective, at the same time the most open and manageable, except the long sand or bran bags, would be the fracture box with a long outside piece. The old Pennsylvania Hospital splint, well known here as that of Dr. Joseph Hartshorne, without the screw and the perineal cushion, would answer at least as well. This is a fracture box in separate side pieces without a floor; in other words, it is a wide long outside splint and equally wide short inside

one, keyed together, at the lower end, with a fixed cross-piece, through or over which passes the extending cord; the ends of the splints reach far enough beyond the heel to allow room for the longitudinal mortices along which moves the upright foot board, to which the patient's foot may be attached for proper support, and with which the extension is maintained by connection with the weight.

This apparatus was for fifty years a popular one, although its only original feature, the perineal cushion, has long since given way, like the remora, to other means of counter-extension; but for ordinary cases the long and short sand bags answer every practical purpose, even better in compound than in simple fracture. In short, we are bound to say that ample experience here, and in United States Army field and general hospital practice throughout the war, has abundantly satisfied us as to the sufficiency of the incomparably simple cylinder bag of sand, saw-dust, or bran, for retention, compression and support in fractures of the leg or thigh. The best of these materials, on account of weight and cleanness, is the sand, the use of which was, we believe, first adopted at the Pennsylvania Hospital, during the war, by Dr. Wm. Hunt. A well padded anterior splint and corresponding posterior splint should be applied to the thigh in case of violent spasm or unusual angular displacement, being kept in place with separate circular strips passing outside of the bags or long splints; but in ordinary cases there is no necessity for this or any other local dressing—least of all for a continuous bandage. The only really new idea, beyond the simplification, that we can discover in the present method of weight extension—although we are still disposed to regard it as American and Dr. Back's, since he finally developed it—is the attachment by adhesive strips. The adhesive strip improvement constitutes a vast and inestimable step in advance, which has done as much for the employment of extension, in all of its forms, as the invention of paper did for printing.

Nor have I the slightest hesitation in saying that the extension use of adhesive strips is not only an American, but a Pennsylvania if not a Philadelphia invention. The record is too clear to be contradicted without unreasonable error, as I demonstrated long ago in a review of Hamilton on Fractures (see this Journal for April, 1860), which seems to have escaped the attention of some writers who ought to be better informed upon this question of American and local priority.

My inclination has always been to look upon many of these questions of priority as without interest, if not deserving to be regarded very much in the light which John Bell so happily, but so unmercifully attached to them. Still, as an eye-witness of nearly the earliest introduction of adhesive strip extension by Dr. Ellerslie Wallace at the Pennsylvania Hospital in 1844, and of its constant use in a large number of cases from that time until a full description of the present method was published by Dr. Sargent in his edition of Druitt's Surgery (1848), and in his *Minor Surgery*, also

in 1848 (p. 201), and circulated to the extent of hundreds of copies of each throughout the country, I feel bound to take this opportunity to repeat my testimony already placed on record.

It was vaguely suggested to Dr Wallace at the Pennsylvania Hospital, in 1843, by Dr. Ennis, a former pupil of Dr. Swift, of Easton, Pennsylvania. Dr. Ennis merely said that his old master employed sticking plaster instead of gaiters to attach the limb to the extending bands, in treating fractured thigh. Dr. Wallace immediately began to work out the problem, and accomplished it after many trials, without other aid than an additional hint from Dr. Ennis, within a year. This was at least five years, during which interval it was in constant use at the Pennsylvania Hospital, before there is any evidence that it was understood or resorted to elsewhere. The first mention or recommendation of the practice was made in 1830 by Dr. S. D. Gross, who states, in his work *On the Anatomy, Physiology, Diseases and Injuries of the Bones and Joints* (p. 50), that his preceptor Dr. Swift, of Easton, Pennsylvania, had used two parallel strips of muslin, spread at their upper ends with adhesive plaster, as extending bands in the treatment of certain complicated fractures of the leg; and that the method was a good one. The first published account, after Dr. Sargent's in 1848, is said to have been a review of Dr. Sargent's *Minor Surgery* in the *New Hampshire Journal of Medicine* for August, 1850, and subsequently in the same *New Hampshire Journal* for October, 1850. According to this review Dr. Crosby had presented some account of adhesive extending bands, at a meeting of the New Hampshire Medical Society in 1850—he having first employed it in 1849 (see *Am. Journ. Med. Sci.*, 1854, vol. xxvii. p. 77). Dr. Mussey noticed or quoted Dr. Crosby's paper and practice in a single paragraph of his report on Surgery in the *Transactions of the American Medical Association* for 1850 (p. 387), at the meeting held in Cincinnati, Ohio. Dr. Gilbert and Dr. John Neill, of Philadelphia, have written on it as well as Dr. Gross, and subsequently Dr. Swinburne, Dr. Sanborn, and others; but, of all of them, none did so much to bring it into early and general notice—apart from its constant demonstration at the Pennsylvania Hospital to large numbers of medical students and practitioners from all parts of the country—as Dr. Sargent in the two popular surgical text books. Yet we are gravely assured by authority of high standing, that its introduction to the notice of the medical profession was due to a local publication in New Hampshire, and to a brief and cursory report to the American Medical Association at Cincinnati! Being so long practised at Easton and known to the pupils of Dr. Swift, including Dr. Gross, who had noticed and recommended it in a work issued at least fourteen years before it was first tried in Philadelphia, the wonder is, once more, that so simple, effective, pain saving, and labour saving an expedient should not earlier have worked its way into its present general favour and adoption.

ART. IV.—*On Phosphorus Poisoning and Fatty Degeneration.*—By WM. PEPPER, M. D. (Published by direction of the Biological and Microscopical Section of the Academy of Natural Sciences of Philadelphia.)

I ASK the attention of the Section to a few observations relative to the action of phosphorus upon the animal economy; and as the subject is closely connected with the question of fatty degeneration, I will premise a brief description of this latter process.

As we now employ the term fatty degeneration, it embraces all the conditions in which an excess of fat occurs in any organ, and consequently includes what is more accurately called fatty accumulation, as well as true fatty degeneration. The difference between these two conditions is, however, marked, and may be expressed somewhat as follows: that in fatty accumulation the particles of fat aggregate themselves between the cells of a part, or even within them, without any tendency to destroy them; while in the other form the increase of fat coincides with a loss of vital power of the cell, a degradation of its structure, and a tendency to disintegration. We find, as was most clearly pointed out by Virchow, physiological types of both of these processes in the animal body. Thus the marked increase of fat in the villi of the intestine, and ultimately in the hepatic cells, which follows the ingestion of fatty food, is a true instance of fatty accumulation, since the oily particles disappear after a time, and the parts regain their normal appearance; while, on the other hand, the secretion of milk is an illustration of true fatty degeneration, the epithelium of the lactiferous tubes undergoing a conversion into fatty molecules.

Apart, however, from these physiological instances, we meet with both of these forms in pathological processes, and I would call attention to the conditions under which they occur.

The first point which will appear from a review of these causes is that they all tend to produce a reduction in the vital force of the part or the individual, and are, so to speak, depressing in their character. So far as we are aware, the first requisite for a proper transformation of the fatty matters which enter the system, as well as for the normal retrograde changes in the nitrogenized elements of the tissues, is a full supply of oxygen, and we will therefore note that in all these conditions there is this one common feature of deficient supply of oxygen, or suboxidization. We may thus enumerate these conditions as:—

*Firstly.* When an excess of fat food, or of food capable of being converted into fat, is taken into the body, the amount of oxygen remaining at the ordinary figure. Here the oxygen is, of course, insufficient to oxidize the excess of fatty matter, and a tendency to fatty accumulation occurs.

*Secondly.* When the supply of oxygen becomes deficient to oxidize the fatty material, which, however, is not in excess. These conditions are met with in old age, where the amount of air inspired falls below the previous standard; they also occur in some diseases of the lungs; and finally, it is partly owing to this cause that the prolonged use of alcohol induces fatty degeneration. Here, again, it is manifest that the increase in amount of fat will be rather of the nature of an accumulation.

*Thirdly.* When the supply of oxygen is not sufficient to properly oxidize the nitrogenous elements of the tissues. In this case there is a retrograde change in the composition of the tissues, and the nitrogenous substances disappear to be replaced by fatty matter. It is evident that this can occur in two ways—either by replacement of the nitrogenous elements, which are removed in the ordinary waste of the body, by fat, or by a direct conversion of the nitrogenous substances into fat, instead of into urea, carbonic acid, and water. This last process, which is constantly witnessed in dead animal matter outside of the body when immersed in water, as in the experiments of Quain and Handfield Jones, is not acknowledged by some authorities as occurring in the living body. We believe, however, that it cannot be so excluded, since there are circumstances under which portions of the living body come to occupy very much the relation of dead tissue to the rest of the economy. There is a theory which has, however, been advanced, especially by Ranvier, to meet this difficulty, based upon the well-known fact that nearly all the tissues of the body contain varying amounts of fat, which in many instances is so combined with the albuminoid elements as not to assume its characteristic form, and be recognizable by the microscope. It is thus with the red blood-globules which contain a notable proportion of fatty matter, and with the brain, which contains the largest amount of combined fat of any tissue of the body. According to this view, then, when the nutrition of the cells of any part is impaired, the combination in which the fat exists is broken up, and it appears isolated and free to assume its ordinary form. The causes which give rise to this deficiency of oxygen are chiefly such as reduce the amount of blood reaching the part; alterations in the vessels, as atheroma of the larger arteries, or thickening of the capillary walls; embolism; deficient cardiac force, and destruction of the red blood-globules, the oxygen carriers of the blood, as in violent fevers, or in poisoning by certain substances. It is important to bear this fact in mind.

*Fourthly.* We recognize inflammation as a cause of fatty degeneration; though it probably acts in an indirect way. Thus the inflammatory products may so compress the bloodvessels passing through them that some neighboring part shall have its supply cut off and become fatty; or the imperfectly organized and poorly nourished inflammatory products, resulting from the too rapid proliferation of cells, formed in the meshes of the tissues, may themselves, and are indeed especially prone to, undergo

fatty degeneration. It also appears, however, as in cases of death from acute inflammation of the pericardium, that the inflammatory stimulus causes a rapid increase of cell-action in the adjoining layer of tissue, under which the cells receive a larger amount of nutriment than can be properly oxidized, and thus come to present a fatty condition.

Local fatty degeneration may be due to one or all of these causes, and it may, moreover, happen that fatty accumulation may result from obstruction of the lacteal current from an organ, as the liver, so that the fatty chyle is dammed up in its cells. The view has also been advanced by Ranvier in regard to certain toxic substances, that they produce fatty degeneration by a peculiar depressing action upon the nutrition of the part, which favours the separation of the combined fat. These are, however, I believe, all the well-established causes of either fatty accumulation or fatty degeneration. It is not necessary to allude to the microscopical appearances of the different tissues in a state of fatty change, except to mention the fact that it is not always easy to distinguish whether it be due to accumulation or degeneration, whether it be a fragment of *paté de foie gras*, or of a liver in a case of yellow fever. In some cases of accumulation, however, we are able, by treating the cells with ether, to remove the fat and obtain a view of the cell with its investing membrane and nucleus intact; while, on the other hand, in cases of marked degeneration, there usually will be evidence of more or less destruction of the cells, which appear shrivelled, irregular, and without nuclei. Again, tissues in the state of fatty change of whichever form, present many external characters alike. They are softened and flabby, opaque and often of a yellowish tinge, of low specific gravity, so as to even float in water. But, as would be expected in cases of true accumulation, the organ may even increase in size; while, in extreme degeneration, it is often much reduced below the normal dimensions.

Having premised this about the conditions under which fatty change occurs, I will now offer a few observations on the effects of phosphorus upon the animal economy.

The following case of phosphorus poisoning in a human being is condensed from Dr. Bence Jones, as quoted from Rokitansky:—

A girl poisoned herself by phosphorus matches. Jaundice appeared in a day or two; soon after, she became wandering, vomited a dark brown matter and had convulsions; and on the sixth day died.

At *autopsy*, the body was well nourished; skin yellow; membranes and brain bloodless. In the throat, bloody, frothy, very tough mucus. In the pleuræ, mediastinum, and over base of heart ecchymoses in some places of considerable extent; a slight pleuritic effusion on left side. Lungs full of blood. Liver very fatty, pale yellowish-red, pasty and empty of blood. In the gall-bladder and gall ducts, slimy mucus. Mucous membrane of the stomach swollen, and containing a brown, thick fluid. Small intestines contained semi-fluid matter mixed with blood; spleen small and friable. Kidneys large, very light yellowish-white, and slightly jaundiced; the epithelium of the tubes of the cortical struc-

ture was distended with small and large fat cells, and the tubes themselves were full of fat.

Exp't 1. *Sept. 17.* A very healthy, light-gray rabbit had 1 gr. of phosphorus dissolved in f5j olive oil injected into the rectum. For two days it seemed to eat quite well, drank but moderately, and died on evening of third day.

*Autopsy fifteen hours after death.*—Marked rigor mortis. The stomach was much distended with quite dry finely-chewed grass; the mucous membrane whitish and quite healthy; there was, however, one small patch of congestion; small intestine empty and contracted; cæcum distended with material much like contents of stomach; rectum and descending colon empty, slightly discolored, no ulceration; liver of full size, apparently slightly soft, pale yellowish colour. On microscopic examination, cells literally stuffed with large oil drops, a good deal of free oil also, and in places, evidences of cells breaking down; spleen small, dark, not examined microscopically; kidneys, presented some congestion of their medullary portion, but cortical portion pale, and on microscopic examination epithelium highly granular and fatty; tubes opaque, and with granular contents.

No signs of peritonitis. Heart of normal size; contained very little blood; tissue not materially softened; on microscopic examination presented distinct granular change, with some free oil; voluntary muscles very pale, but showed no change of structure.

Exp't 2. *Sept. 2.* About 1 grain of phosphorus in a mixture of 5j flour, syrup and glycerin was given by the mouth to a second healthy dark-gray rabbit. It appeared to suffer much soon after its introduction, but revived, ate quite well for two days; became very ill, emaciated, with haggard appearance, hurried breathing; and died on sixth day.

*Autopsy five hours after death.*—Rigor mortis moderate. *Stomach* not so much distended as in previous case; pyloric extremity healthy, but fundus discoloured and so much softened and thinned that it ruptured in trying to remove it. *Liver* of full size, soft and fatty, of putty colour, with little blood escaping on section; cells all gorged with fat drops and molecules; here and there nuclei visible, but usually absent or totally obscured; a good deal of free oil, and apparent disintegration of the cells in places. *Kidneys* soft, pale; epithelium granular; tubules opaque, and in places some oil drops noticed. *Spleen* small and very soft. *Heart* distended with dark clots on right side, and containing a good deal of dark fluid blood in left cavities. The microscope showed free oil drops in the blood; the corpuscles pale; the fibrin coagulated firmly; the fibrils of the heart were decidedly granular, though in places transverse striation was visible, and but little free oil was noticed; voluntary muscles healthy.

Exp't 3. A healthy white rabbit was killed suddenly by a blow on back of neck, after being kept in a box by the side of the last rabbit, and fed upon similar food during the course of the experiment.

*Autopsy half hour afterwards.*—*Stomach* healthy, distended with grass; cæcum also distended; rest of bowel contracted. *Liver* of yellowish colour, firm; under microscope, cells presented a good many fatty particles, but few oil drops, and little free oil; and in a great many instances the nuclei could be observed. *Kidney* quite firm, epithelium pale, and some of the tubes slightly granular, no free oil. *Spleen* double the size of that in previous cases and more firm. *Heart* contained a little fluid blood and small dark clots, was quite firmly contracted; fibrils were, however, almost, if not



quite, as granular as in previous case; blood contained no fatty particles; voluntary muscles healthy.

In summing up the results of these three observations, it is to be borne in mind that even in the healthy rabbit, the hepatic cells contained a notable amount of fat, and the muscular fibrils of the heart were distinctly granular; and I learn from my friend Dr. S. Weir Mitchell, whose extensive researches in experimental physiology are so well known, that it has frequently happened to him to find marked fatty accumulation in the tissues of healthy rabbits. There was, however, no difficulty in deciding that, in the case of the rabbits to whom phosphorus had been administered, the fatty condition of the organs was altogether morbid. The marked softness and friability of the tissues indicated this, as well as the microscopic appearances, which showed a very much greater amount of free oil as well as of fat contained in the cells, and in addition positive evidences of disintegration of the cells of the liver at least. It is, however, important to bear in mind, in all experiments upon the production of fatty degeneration, that many of the lower animals appear to present a fatty state of the muscles and glandular organs as an habitual and normal condition. Handfield Jones has noticed this in regard to London dogs and cats; and Ranvier disclosed the fallaciousness of an entire series of experiments on phosphorus poisoning in frogs, by showing that the tissues of these animals are naturally fatty at certain periods of the year.

Finally I will quote from Ranvier's memoir on phosphorus poisoning (*Mém. de la Société de Biologie*, 1866), the following observation on the local action of phosphorus:—

“The 24th of September, a piece of phosphorus seven millimetres long and two millimetres thick, was introduced into the subcutaneous tissue of a young rabbit, between the ears. The calcaneum of a new-born rabbit was then introduced into the right flank of the first animal. Between this time and the 4th of October, evidences of inflammation were observed in the neighbourhood of the calcaneum, whilst no such signs were noticed near the fragment of phosphorus. On this latter date, the animal was killed, and the calcaneum was found surrounded by a layer of organizing inflammatory lymph, while nothing of the kind was present in the neighbourhood of the phosphorus, which preserved its transparency, and had not appreciably diminished in volume.

There was no fatty degeneration of the liver, kidneys, or muscles.

The same observer introduced into the subcutaneous tissue of different rabbits, various inert foreign bodies, and constantly found that in the course of a few days they induced suppurative inflammation.

It is not necessary to spend time in illustrating further the fact that in cases of phosphorus-poisoning acute and extreme fatty degeneration does occur. In addition to the innumerable experiments that have been performed on the lower animals by German and French observers, Tardieu (*Etude Médico-Légale sur l'Empoisonnement*, 1867) has succeeded in collecting no less than twenty-three cases of poisoning by this substance in the human subject; and in his admirable description of the lesions found

in the cases there is conclusive evidence of every grade of fatty change, from a condition in which the cells retain their size and shape, but are partly filled with fine fatty granulations which conceal the nucleus, to the most advanced stage in which the cell becomes disintegrated and the fat set free.

I may, however, allude to the astounding rapidity with which this change occurs, since Tardieu narrates cases in which, within so short a time as forty-eight hours, fatty degeneration of the heart, liver, kidneys, glands of the stomach, and voluntary muscles has occurred. It is impossible to avoid observing the analogy which the symptoms in these cases present to those of yellow fever and acute yellow atrophy of the liver, in all of which the constant vomiting, frequently of blood matters; the jaundice; the condition of the urine, which is often albuminous or even bloody; the uncertain and frequently low grade of the febrile action; the character of the nervous symptoms; and, finally, the post-mortem conditions—the universal fatty degeneration of the tissues, the ecchymoses of the serous investments of the different organs, the altered state of the blood—are so prominent. The relation between these three conditions offers, indeed, one of the most attractive and important pathological problems of the present day.

It remains, however, to endeavour to determine what is the particular method by which phosphorus produces these effects, and we will find that various theories have been already advanced. Bearing in mind the conditions we have already enumerated under which fatty degeneration occurs, it is at once evident that the action of phosphorus has no relation whatever to the amount of fatty food taken during the time of its activity.

There remain, then, but four views—namely, that phosphorus checks the action of the lacteals; that it has a specific depressing action on cell-nutrition; that it induces fatty degeneration by its irritant action; and, finally, that it acts upon the blood, destroying the red globules, and thus preventing sufficient oxygen being carried to the nitrogenous tissues.

The idea that phosphorus induced fatty degeneration by arresting the absorption of fat by the chyloferous vessels was originated by Lewin at a time when it was not known that any other organ than the liver was affected in phosphorus poisoning, and accorded with the observation that in animals who had taken phosphoretted oil, and had been killed a few hours after, the chyloferous vessels were found filled with serous liquid merely, while the blood in the portal vein contained abundant fine fatty particles, which he supposed to be filtered out by the liver. Since the observation, however, that in such cases all tissues alike suffer from the effects of the poison, it is manifest that it must act in some other manner.

The next theory is that propounded by Ranvier, that phosphorus determines fatty degeneration by impairing the nutrition of the histological elements, in virtue of its contra-stimulant action on them, and thus de-

stroys the combination which had existed between the fatty and albuminoid matters. One of the arguments which he adduces in support of this view is the absence of any local irritant action of phosphorus, as detailed in the case I have already related. He has performed the same experiment of placing a piece of phosphorus under the skin upon several frogs, and has found in none of them any traces of inflammation around the piece of phosphorus, while, in several cases, death followed at long intervals, and the viscera were found highly fatty.

These observations upon the local action of phosphorus are highly interesting, and deserve to be carefully prosecuted. They do not, however, appear to me conclusive in regard to the mode of production of fatty degeneration, since it was not found that the parts immediately in contact with the fragment were especially affected. And again, though it is thought by many that phosphorus may, to a certain extent, be absorbed as such, and retained in an unchanged condition in the viscera, as shown by a case in which the viscera of a woman who died while taking phosphorus medicinally, were found luminous, free phosphorus can scarcely ever be detected, after death, in the tissues; and the probability is very strong that it is almost entirely oxidized, and passes through the economy as phosphoric acid.

Munk and Leyden have also found by experiment that if a solution of phosphorus be injected directly into the blood, phosphorous acid vapours are exhaled, and pneumonia set up, but no fatty degeneration occurs. In like manner, phosphoretted hydrogen and hypophosphorous acid were tried without producing the characteristic lesions. But when, on the other hand, phosphoric acid was introduced either into the blood or stomach, extreme fatty degeneration was quickly produced. It appears, therefore, that though phosphorus is, according to Ranvier's experiments, singularly inert and unirritating, it is not in virtue of this quality that fatty degeneration is induced by poisonous doses of it, since it appears necessary for it to undergo oxidation into phosphoric acid in order to produce this effect.

I have already alluded to the fact that Virchow and his school explain the production of fatty degeneration in phosphorus poisoning by the irritant action of this substance, which induces rapid proliferation of cells, and ultimately fatty change in the parts. Ranvier, who indeed holds that inflammation and fatty degeneration are antagonistic, calls attention to the undoubted fact that it is by no means invariable to have evidences of gastro-intestinal inflammation, and that for such to be present it is not necessary that the poison should have been introduced into the stomach.

When, however phosphoric acid itself is injected into the stomach, it produces the strongest marks of corrosion, and the probability is that when phosphorus is used the result depends upon the rapidity with which it becomes oxidized and is excreted from the system, since in quite a large

proportion of cases decided congestion, tumefaction, and even inflammation have been noted after death.

It appears to us, then, that phosphorus acts as so many other poisons do, by entering the blood in the form of a highly irritant substance, and in the course of its excretion from the various glands, induces a degree of irritation bordering on inflammation, attended with a proliferation of cells, which, as frequently happens, are not fully organized, and readily undergo fatty degeneration.

There is, however, one farther point in the action of phosphoric acid which must strongly favour the occurrence of this change, and which, indeed, has been assigned by Munk and Leyden as the sole cause of it—I refer to its action on the red blood-globules, which, as shown by these observers, are dissolved by it as by the bile acids. The falling of the temperature of the blood, the ecchymoses of the serous membranes, the serous effusions stained with dissolved hematine, the bloody urine, which are noted after its introduction, are all results of the same peculiar action.

The manner in which this destruction of the red globules, which are the oxygen-carriers of the blood, favours fatty degeneration, is evident; and, when combined with the tendency which always exists in cells formed by unduly active proliferation, to undergo this change, appears to me to afford a satisfactory solution of the extraordinary lesions met with in phosphorus poisoning.

I may add that the authors just referred to have extended their experiments to sulphuric, nitric, oxalic, and tartaric acids, and have shown that all substances which dissolve or destroy the blood globules tend to produce fatty degeneration of the various tissues.

It may not, in conclusion, be amiss to again allude to the strangely close similarity between the symptoms of yellow fever and acute atrophy of liver, and those of poisoning by phosphoric acid, taken in connection with the fact that the bile acids resemble it closely in their action on the blood.

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ART. V.—*Sources of Error in the Analysis of Urine.* By M. C. LEA and WALTER F. ATLEE, M. D.

OUR attention has been recently attracted to two sources of error in urine analysis. As these are such as may very easily take place, and may lead to very serious errors in treatment, it has seemed desirable to call attention to them. The one source of error leads to an *under-estimation of the quantity of uric acid*, the other to an *illusory detection of fat*. In this last the illusion may be such as to deceive inexperienced observers,

and lead to the supposition that fatty matter is present in large quantity, when there exists in reality not a trace of it.

### 1. *Under-Estimation of Uric Acid.*

When urine has been freed from any possible presence of albumen by boiling and filtration, whilst the heat keeps the alkaline and earthy urates in perfect solution, it is usual to add nitric acid to decompose the urate of soda, and of ammonia and lime, if these last be present. In the older treatises it is directed to evaporate gently to the consistence of a syrup and then, after standing, the crystallized uric acid is caught on a weighed filter, well washed, dried, and weighed.

In the later treatises this evaporation is rejected as unnecessary; because it is affirmed that uric acid is nearly insoluble in the acidulated urine, so that the quantity thus lost is unimportant, or at least is compensated for by the colouring matter which attaches itself to the uric acid, and increases its weight. Thudichum gives approvingly the following statement:—

“It has been estimated by Heintz that the loss incurred by the imperfect insolubility in acidulated urine of uric acid amounts to 9 parts in 100,000 of the urine used for the analysis, and that this loss is not increased by the presence of sugar, albumen, or the soluble constituents of the blood. In all cases this loss is compensated by a certain amount of red or brownish colouring matter, which is mechanically but intimately adherent to the particles composing the crystals.” (p. 84.)

A reduction of the urine by evaporation Thudichum considers only necessary when it contains bile, and then because the uric acid may contain so much colouring matter that its weight may be over-estimated.

The amount of colouring matter usually attached to the crystals he estimates at one-tenth, which may be balanced against the amount retained by urine.

As respects the time needed for the uric acid to crystallize out, the information given is very vague. “The crystallization of uric acid may be said to be completed when all the crystals are of nearly uniform size. But as we possess no other indication on this point, the acidulated fluid must be allowed to stand rather longer to make sure of a perfect precipitation.” (p. 84.) This information is, to the last degree, indefinite. There are no crystallizations of *any* substance the crystals of which are of uniform size. In another place (p. 83), *twenty-four to forty-eight hours* are spoken of.

To ascertain whether a correct result could be obtained in this way, several analyses were made; and, after determining the quantity of uric acid obtained, the residues were worked over, and the quantity of uric acid not obtainable by the above process was determined. The results were such as to show that this method is to be adopted with a good deal of

hesitation, and is never to be depended upon except after the operator has, by repeatedly checking analyses of this sort by a second analysis of the residues, learned exactly how far he can trust his results. The above directions may be strictly followed, as will presently be seen, and yet one-third of the uric acid may be lost. We would recommend always to let the acidified urine remain three full days, at least, to allow of a full deposition.

*Analysis 1.* After acidifying the urine (45 oz.) it was allowed to stand forty hours. The uric acid was caught on a weighed filter, washed and dried, and weighed . . . . . 7.55 grs.

The filtrate was then evaporated to a syrupy consistence, much nitrate of urea crystallizing out, the uric acid was caught on a weighed filter, well washed and dried, and weighed . . . . . 5.60 "

*Analysis 2.* Another specimen was treated in the same manner, but allowed to stand sixty hours. Uric acid found . . . . . 7.45 grs.  
The filtrate yielded only . . . . . 0.85 "

*Analysis 3.* Another specimen treated in the same manner yielded, after seventy-two hours . . . . . 10.95 grs.  
The filtrate was found to contain . . . . . 0.65 "

It will thus be seen that the relative proportion of loss decreases steadily with the length of interval allowed. But the proportion of uric acid *not* obtained in the first determination is larger than these figures indicate. For it is to be remembered that uric acid is not entirely insoluble in water, and that in the above method of operating the uric acid is divided into two portions, which are separately washed. This washing must be thorough, in order to get rid of the nitrate of urea; and as the tendency of the uric acid is to choke the pores of the paper, the filtration is very slow; consequently, the uric acid is exposed for a long time to the solvent action of the washing water. The loss is doubled by the separation into two operations.

It will, therefore, always be better to largely evaporate the acidified urine—a reduction to one-fourth or one-fifth would be proper; this should go on very slowly, upon a sand-bath, and should occupy three, four, or five days. If it is necessary to make an analysis without the convenience of a sand-bath, the urine (which should, of course, represent the entire secretion of twenty-four hours, or better, of forty-eight) should be acidulated with nitric acid, using about one ounce to fifty, and should then stand about four days.

If the reduction by evaporation has been included, and has been carried so far as to produce crystallization, particular care will be necessary to free the uric acid from adhering nitrate of urea. This latter substance will crystallize around the uric acid in such a manner as to adhere with the greatest pertinacity, and, without particular attention, may give rise to great exaggeration of the quantity of the acid. It will be best to stop

the evaporation as soon as crystalline crusts begin to form; or, if a considerable crystallization have taken place, pour off the liquid portions into the weighed filter, and then add cold water to the crystalline portion, let stand for five or six hours, then pour off upon the filter, and repeat this half a dozen times. To affect a complete solution, a removal of the nitrate of urea upon the filter itself would require too large a quantity of water and corresponding loss of uric acid.

## 2. *Illusory Detection of Fat.*

When fatty matters are existing in a state of emulsion in the urine, it is usual for either qualitative or quantitative determination to agitate a portion of the urine (an ounce is a convenient quantity for qualitative observation) thoroughly with about its own bulk of ether; the fat dissolves in the ether, and may be separated by a pipette or separating funnel, and by spontaneous evaporation leaves the fatty matter behind.

In examining a specimen of urine in this way, the ether, after agitation, rose to the top so charged with matter as to resemble a half liquid pomade. It was perfectly white, and so thick as to be pasty. On inclining the bottle, it would only slowly follow the motion, and stop before recovering its equilibrium, so that one side stood higher than the other. It adhered to the side of the glass vial in smeary greasy drops. If violently shaken up, it retained a quantity of bubbles, acquiring a lathery appearance; these would remain for days, but finally disappear, leaving the semifluid, opaque white matter as before.

Separated by a pipette, and spontaneously evaporated, it left a dirty, whitish greasy mass.

An illusion so complete as this is very rarely seen. The appearances were calculated to leave no doubt of the presence of quantities of fat, which were apparently obtainable in the solid state by the evaporation of the ether. Nevertheless, a careful examination of this residue showed that, instead of consisting of fatty acids, it contained nothing but the normal constituents of urine—viz., urea, urate of soda, colouring matter, &c.; in a word, this apparently fatty matter was *soluble in water*, and when dissolved reconstituted normal urine.

This conclusion received a confirmation in the fact that the residual urine, after treatment with the ether, was capable of producing a similar result with a fresh portion of ether, though less easily than at first.

As no appearances of this sort seem ever to have been described, it was thought desirable to endeavour to fix the conditions under which this remarkable emulsification (for such it undoubtedly is) takes place.

It was found that different specimens of urine, even from the same person, varied a good deal in their capacity for emulsifying.

It was desirable that the experiment should include at least one specimen ascertained to be perfectly healthy and normal. Such a specimen was ob-

tained, and its character verified. When this was tried, two different specimens of ether were used for comparison. With one of these the emulsion was immediately obtained; with the other, nothing of the sort was apparent, even after prolonged agitation.

This difference is interesting, and it is believed depends upon the different proportions of *alcohol* contained in the ether. A large proportion of the ether now manufactured is intended for photographic purposes; in such, the presence of water is extremely injurious, but of alcohol comparatively unimportant. This explanation was confirmed by the fact that the addition of a few drops of alcohol to the specimen of ether that refused to emulsify, immediately conferred on it that property.

Too much importance, however, is not to be attached to the function of alcohol; for a few hours' standing conferred on the normal urine the property of emulsifying with the specimen of ether which before it had not possessed, and another specimen of urine possessed from the first the property of emulsifying with the same ether which the other only emulsified with after standing.

A distinct proof that the fatty-looking, pasty substance is simply an emulsion lies in the fact that, by long standing, a layer of clear mobile ether slowly forms on the top of it. This is, of course, decisive upon the point. If the pasty substance were a solution of fat in ether, no portion of the ether could separate from it by any standing, however prolonged.

The time required for the separation of a stratum of ether is extremely variable. In some cases it takes place in a few hours; in others, not for several weeks. In one specimen, that has now stood for five or six weeks, there is but a thin layer of ether, whilst the stratum of fatty-looking emulsion is over half an inch thick; and even at this lapse of time resembles a semifluid pomade.

It appears, then, that almost any specimen of urine will form an emulsion when violently agitated for some time with ether, especially if the ether contain a small quantity of alcohol; but that this condition is by no means essential; also that different specimens of urine vary extremely in the time of agitation required, in the quality of the ether capable of emulsifying them, and in the time during which the emulsion continues to exist. There exists, however, no doubt that the range of conditions under which this delusive appearance may be produced is very wide, and has, probably, led to many errors in diagnosis.

When, therefore, ether appears to dissolve out fatty matter from any specimen under examination its physical condition must never be taken as evidence. It must be separated, allowed to evaporate spontaneously in a beaker or basin, and the solid residue must be examined. Solubility of the residue in water will at once indicate that fat is not present.



ART. VI.—*Brief Notes of Four additional Cases of Ovariectomy.* By HENRY MILLER, M.D., late Professor of Obstetric Medicine in the University of Louisville, Ky., &c.

IN the *American Journal of the Medical Sciences* for April, 1859, I recorded two cases of ovariectomy, with some observations on the pathology and treatment of cystic degeneration of the ovaries. In both these cases a perfect and permanent cure was the result. One of the patients, as there stated, gave birth to a healthy child nine months after her return to her husband, and is alive at the present time; and the other, a widow, enjoyed good health for seven and a half years, and died of congestive chills, then prevalent in her neighbourhood.

Since these cases were published, I have performed the operation in *four other cases*, and I will now give brief notes of them, in order that the profession may have my entire experience in this formidable operation. I may say, *in limine*, that I have always regarded the operation with some degree of aversion, and have rather shrunk from than courted its performance, and for this reason my cases have been few and far between. The uncertainty that must hang over the diagnosis, in some cases, notwithstanding our improved methods of investigation, makes me hesitate and ponder long before I can bring myself to the point of laying open the cavity of the abdomen, and sweeping it with my hand to determine the nature of the tumour and the possibility of its safe removal. I hold it to be an impossibility to know of a certainty, before the operation is commenced, whether or not there are adhesions of the tumour of such a nature as to render it hazardous, if not impracticable, to extirpate it. One such case occurred to me out of the four which are to be now related, and although the patient recovered, it was only after months of loathsome suffering, which reduced her to the last degree of emaciation, from which it seemed that she could not be resurrected.

If we look into the records of ovariectomy, we shall find many instances of abortive attempts to extirpate diseased ovaria on account of insuperable adhesions, and of disappointment in the aim of the operator, who finds when he opens the cavity of the abdomen an extra-ovarian tumour or no tumour at all. In an appendix to his translation of Kiwisch's *Clinical Lectures on Diseases of the Ovaries*, Mr. John Clay, Surgeon, Birmingham, has tabulated all the cases of ovariectomy which could be collected up to 1860, amounting in all to 537. In 24 cases out of this number, the tumour could only be partially excised; in 13, the tumour was extra-ovarian, mostly uterine; in 82 the operation was abandoned in consequence of adhesions; in 21, abandoned in consequence of the disease being extra-ovarian; in all, the aim of the operation was defeated in 140 cases. Thus, it is seen, that in one out of not quite four cases, as the surgeon proceeds

with his operation he finds himself balked by errors of diagnosis or unforeseen complications.

I have entitled this article "Brief Notes of Four additional Cases of Ovariectomy," because my records of them consist only of memoranda of prominent points made in pencil in my visiting lists for the years in which the operations were performed. Their brevity I can hardly say that I regret, for in most reports of cases there is a minuteness of detail which is both irksome and unprofitable to the reader.

Without further prelude, I will now proceed to report my cases:—

CASE I. *Large multilocular tumour of the left ovary; the tumour extirpated without an untoward symptom; cure.*—Mrs. T., æt. about 47, of Boyle County, Ky., came to the city in October, 1860, to consult me concerning a tumour of the abdomen, which had been first observed two years ago. It had attained to very large size, extending across the abdomen, and rising up to both hypochondriac regions. There was dulness on percussion over the front and sides of the abdomen, and prominences, corresponding to the cysts which composed the tumour, could be felt and seen. There was besides fluctuation of variable distinctness in different parts of the tumour. The uterus was normal in size, as ascertained by the sound, and not attached to the tumour or much displaced by it. The diagnosis that it was a compound cystic tumour of the left ovary, and that there were no material adhesions, was as satisfactorily made out as it can be in such cases, and I determined to extirpate it.

October 18, 1860, Professors Middleton Goldsmith, G. W. Bayless, and the late John Hardin, and Drs. S. Brandeis and J. Goodman being present, the patient was placed on the table and put under the influence of chloroform. An incision along the linea alba was made, from a little below the umbilicus to two inches above the pubes, and the tumour brought to view. Passing my hand into the abdomen, I found only slight adhesions between the tumour and parietal peritoneum, which were easily broken up. Finding that the tumour was much too large to be brought out through the incision, I punctured it with a trocar and drew off twenty pints of cystic fluid by measure, besides about four pints which escaped in the progress of the operation. The solid part of the tumour, together with the smaller cysts which were not emptied, weighed eight pounds. The tumour was then brought out of the abdomen and held by an assistant, while the pedicle was transfixed with a double ligature of strong silk cord and tied in halves to prevent its slipping. I may here remark, once for all, that is the manner in which I have dealt with the pedicle in my other cases, save one, which will be mentioned in its proper place. The pedicle was then cut across as close to the tumour as possible.

After carefully sponging out the cystic fluid which had escaped into the abdomen, the wound was closed by the interrupted suture of annealed iron wire, and the ligature of the pedicle brought out at the lower angle of the wound.

The usual dressings and bandage were applied. Sutures removed on the ninth day. The wound well united. Ligature of the pedicle came off the nineteenth day.

The after-treatment consisted in securing quiet by opiates, and in moderately nourishing diet, which she took with appetite. In four or five weeks

she returned home cured, and has since enjoyed better health than she had for many years before. She is now (January 15, 1869) alive and well.

**CASE II.** *Cystoid of the left ovary : tapped once ; ovariectomy ; clamp used for pedicle ; death in less than twenty-four hours ; fatal termination attributed to clamp.*—Mrs. A. of Tennessee, æt. 52, a delicate, spare lady, affected with chronic bronchitis, was sent to me to undergo the operation of ovariectomy. Her family physician had correctly diagnosed the disease to be cystoid degeneration of the left ovary, and had tapped her shortly prior to her leaving home. When she first came under my observation she was thin and delicate looking, had a harassing cough, with dyspnoea and pain in the chest. The operation was deferred several weeks on account of the cough, but on the 10th of May, 1865, it was performed in the presence of Professors Ireland and Bayless, and Drs. Perkins and Goodman.

Chloroform was administered, and the cavity of the abdomen was opened by the usual sub-umbilical incision. The tumour was now brought to view, and the inferior posterior part of it found to be adherent to the small intestine. The adhesion was broken up with the finger, the cyst was tapped to reduce the size of the tumour, which was then brought out through the incision. A strong double ligature of silk was then applied to the pedicle, as in the previous case, but when the pedicle was cut, the ligature slipped, and a clamp was applied instead of the ligature. The pedicle was thin and membranous, and so short withal that the clamp could only be brought externally by considerable traction. The wound was closed by the interrupted suture of silver wire, and dressed in the usual manner.

No sooner had the patient been put to bed than she began to complain of pain in the lower part of the abdomen, which soon became constant and agonizing. Opiates were administered in full doses, and stimulants were had recourse to, but to no purpose; she sank rapidly, her countenance became cadaverous, her features pinched; she soon passed into a comatose condition and died in twelve or fifteen hours.

*Post-mortem examination.*—Not expecting her to survive during the night, I had requested Professor Ireland to meet me the next day to assist me in making a post-mortem examination, but he was prevented by a call into the country. With no other aid than the nurse I made such an examination as I could, and found the clothes over the abdomen soaked in blood, and dark fluid blood issuing from the nose and mouth. On removing the sutures to expose the abdominal cavity, the pedicle was seen to be lacerated, the clamp holding on to some of its tatters, and about a half pint of dark thin blood was effused into the cavity of the pelvis. There was also inflammation of the uterus and contiguous small intestine.

In this case, the cause of the severe pain which followed so soon after the operation and of the hemorrhage and inflammation appeared to me to be the traction made upon the uterus and pedicle by the clamp. I am strengthened, not to say confirmed, in this opinion after carefully reading Mr. Spencer Wells' volume (*Diseases of the Ovaries*, vol. i., London, 1865), in which not a few cases are recorded in which severe pain, requiring the free use of opium, came on soon after ovariectomy, and in such cases the clamp was applied to very short pedicles, and much traction was used to bring it without the cavity of the abdomen. This implies, of course, dragging the fundus of the uterus two inches above the pubes and fixing

it there, which cannot be done without great violence to that organ. Indeed, Mr. Wells, in discussing the cause of death in one of his cases (the fourth) in which a short pedicle was treated with a clamp, inquires whether the sudden collapse of his patient was an example of that condition so well described by Dr. Simpson as an occasional occurrence after any operation implicating the uterus and its appendages. "I am not sure," says Dr. Simpson, "but that in amputating the cervix uteri, by obviating the necessity of forcibly dragging down the uterus from its position in the pelvis, we do something towards the prevention of this alarming and dangerous complication." If dragging down the uterus from its position in the pelvis, as a help to any operation upon it, be attended with the risk of alarming consequences, surely, dragging it out of the pelvis into the abdomen cannot be less fraught with hazard. In some of his cases, where he applied the clamp to short pedicles, very close to the uterine, Mr. Wells found it necessary to remove it and substitute the ligature in its stead. For my own part, I shall never think of employing the clamp again, except in a case of long and strong pedicle, which will admit of being brought externally without traction that might displace the uterus.

After all, what evidence have we that the clamp, or any other of the numerous methods of treating the pedicle which have been devised, is preferable to the ligature as used by Dr. Ephraim McDowell, of Danville, Kentucky, who first conceived and executed the operation of ovariectomy.

Dr. Charles Clay, of Manchester, the pioneer of ovariectomy in England, unmoved by the prolific ingenuity at work around him, in devising new methods of treating the pedicle, continues to employ his *hempen* ligature, too well satisfied with it to try any of the substitutes that have been proposed for it. If we look into Mr. Wells' book, we shall find that out of 114 cases of completed ovariectomy, in nearly all of which the clamp was used, 75 recovered, 39 died; 65 per cent. recoveries. Dr. Clay's cases, up to the latest date I have access to, numbered 110, of which 76 recovered, 34 died, 69 per cent. recoveries, 4 per cent. in favour of the cases in which the ligature was employed.

*CASE III. Twin cysts of the ovary or ovaries; diagnosis unsatisfactory; operation insisted on by patient; the abdomen opened but the Cysts could not be extracted; unexpected recovery.*—Mrs. B., of Ohio, æt. about 27, came to Louisville to consult me in respect to the propriety of an operation for the removal of a large tumour of the abdomen, which had begun to incommode her, though her general health was good. She was a sprightly, active woman, of a cheerful disposition, and had been married two or three years without conception having taken place. She had been an office patient of mine previous to her marriage, while she resided in Louisville, and had a tumour then as large as an infant's head, which had slowly grown until now it reached to the upper part of the

abdomen. The tumour fluctuated rather obscurely and could be traced into the pelvis. On vaginal examination only the neck of the uterus could be felt, the body of it appearing to be fixed to the tumour, for it could not be moved by the uterine sound. I gave it as my opinion that the disease was cystic tumour of the ovary, but I was averse to an operation on account of the adhesions which I believed to exist between it and the uterus. I tried to persuade her not to have an operation performed, but she was so intent on getting rid of the tumour at all hazards, that after repeated examinations, influenced no doubt by a desire to gratify her wishes, I at length agreed to operate.

Accordingly on the 30th of October, 1866, having placed her under chloroform I operated in the presence of Professor M. Goldsmith, and Drs. W. B. Caldwell, J. Goodman, and E. Miller. On opening the cavity of the abdomen by the usual incision, two large cysts were brought to view occupying the two sides of the cavity, one on the right and the other on the left side, and reaching to the hypochondriac regions. Below they were joined together, and hence I have called them twin cysts. They were tapped, but finding that they could not be delivered, the incision was extended two inches above the umbilicus. On turning out the cysts, it was found that there was adhesion between the posterior face of one of them and a convolution of the small intestine, perhaps ten or twelve inches in length, which was broken up by the fingers. The cysts were then drawn upwards to get at the pedicle; no pedicle could be found, but instead of it the conjoined cysts were intimately united by a broad attachment to the uterus and bladder, and when they were raised up they covered the pelvic viscera as with a canopy.

Here was a dilemma: to forcibly break up such an adhesion would assuredly destroy the patient; to close the incision and leave these immense cysts included in the abdomen to inflame and suppurate and perhaps to become gangrenous would be scarcely less hazardous. But after a short consultation it was concluded to close the wound as the safest of the alternatives.

My apprehensions for my patient speedily began to be realized. Within the first twenty-four hours after the operation, she had an acute attack of peritonitis, for which she took pills containing 3 grains of calomel and  $\frac{1}{2}$  grain of morphia every two or three hours until ten pills were taken, besides several enemata of McMurphy's elixir of opium. On the third day bowels were freely moved by purgative medicine, and on changing the dressings it was found that there was a copious discharge of a dirty, highly fetid matter from the wound. On the ninth day the sutures were removed and the wound was united except at its lower part, where there was an opening that might receive the point of a finger, through which the offensive discharge was issuing in such quantity as to require many layers of cotton batting to absorb it. There was swelling, tenderness and pain of the abdomen, with constant hectic fever, sweats, and progressive emaciation. Suppurative inflammation with sloughing of the right cyst took place, and a new opening was formed at the upper part of the wound, through which a large quantity of pus and sanies was discharged, which gave great relief for the time and the swelling subsided. After a time the other cyst appeared to be the seat of suppurative inflammation and discharged itself through the same opening.

In this condition she lay through the winter, wasting away with the hectic preying upon her, without appetite—though she was persuaded to

take beef-tea, cream and other nutrients sent her by kind friends—the black, horribly offensive discharges pouring from both openings in the wound, as if from inexhaustible fountains, and at length, to add to her disgust and mortification, gas began to escape with a hissing sound through one of the apertures, showing that a minute perforation of the bowels had taken place. This continued for many days.

Throughout the dreary winter she was confined to a small room, heated by a stove, and despite the utmost attention to cleanliness and the employment of disinfectants, the bedding, and even the furniture appeared to be permeated by the nauseous odor of the discharges. To remove her from this infected atmosphere was urgently necessary, but in her exhausted state we durst not expose her to the inclement weather. When winter had passed she was removed to St. Joseph's Infirmary, where under better sanitary conditions improvement was soon visible. Her appetite returned, her strength began to return, she soon sat up, and was presently able to walk about her room; the discharge from the wound began to diminish and become less offensive, and in April, 1867, she returned home.

In the autumn of the same year I received a letter from her husband, in which he informed me that his wife had entirely recovered her health and was stouter and healthier than she had ever been. In this case, the cysts would appear to have been utterly destroyed by the process of sloughing, and there is little likelihood of their reproduction.

*CASE IV. Cystoid of the left ovary complicated with chronic bronchitis; extirpation of the tumour; death.*—Mrs. J., of Henderson County, Ky., æt. about fifty, consulted me in November, 1867, on account of a tumour of considerable size in the abdomen, and a severe cough which had long troubled her, and which she regarded as consumption. There were, however, no signs of tubercles in the lungs, only the bronchia were affected. She remained with me only a short time, and I prescribed some remedies for the cough, considering that as the most urgent symptom at the time, and she returned home.

In February, 1868, she came back, with the cough much better, though it had not left her entirely. The ovarian tumour had made rapid progress and now completely occupied the abdomen, with great tension of its walls, and embarrassing both her respiration and digestion. The appetite, which had been poor for months, was nearly gone, and the little food which she took oppressed the stomach until it was ejected. She was much emaciated, and her complexion extremely pale. I did not deem her case a suitable one for ovariectomy, and I, therefore, advised tapping for the relief of her sufferings, which was performed on the 24th of the month. The fluid which was drawn off, amounting to two or three gallons, was so glutinous that it was squeezed through the canula by manipulating the abdomen, and the operation occupied upwards of an hour. Her respiration and digestion were much improved by the operation, and she could now take food without discomfort. Directing her to take an occasional dose of active cathartic medicine, I sent her home.

The relief afforded by the evacuation of the fluid was of short duration. The cyst refilled rapidly and she came back in two months with a view of having it removed by operation. Her respiratory and digestive organs were as much oppressed as ever, she was totally without appetite, greatly debilitated, countenance anxious, distressed, features pinched, and everything about her made the impression that life was rapidly drawing to a

close. I could not, I did not advise the operation. On the contrary, I represented to her that the chances of her surviving it were greatly against her. But the love of life or the desire to be released from her sufferings, was so strong, and she begged so earnestly to be permitted to take whatever chance the operation might hold out, that I finally consented to perform it.

On the 21st of April, 1868, in the presence of Profs. L. Powell and G. W. Bayless, and Drs. J. Goodman and T. P. Satterwhite, I performed ovariectomy at St. Joseph's Infirmary. Chloroform having been administered by Dr. Goodman, the abdomen was opened in the usual way, *i. e.*, subumbilical incision; few adhesions, and none of them firm, were encountered; the pedicle, which was unusually thick and broad, was tied with a double silk ligature as in previous cases; wound closed by interrupted suture of silk; wound dressed as usual and bandage applied.

She suffered but little pain after the operation. She was, however, restless and anxious, and could be only partially quieted by opiates. There was no appetite whatever, and the little food she was persuaded to swallow was rejected. Without inflammation or hemorrhage, so far as could be determined, she became more and more feeble, and died on the third day after the operation, apparently from sheer exhaustion.

Thus ended my sixth lesson in ovariectomy, and nothing could induce me to repeat it. I mean to say that when one of these unfortunates is in such a state of utter prostration as Mrs. J. was, and the digestive organs cannot prepare material to build her up again, there is no ground for a reasonable hope that the operation will succeed, while by it we add to her sufferings and deprive her of the few remaining days of life which might otherwise have been allotted to her.

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ART. VII.—*Cases of Rare Cystic Tumours.*

By WM. R. WHITEHEAD, M. D., of New York. (With a wood-cut.)

DURING the past year I have observed two rather unusual cases of hæmatic cysts, one of them presenting very rare pathological features. A short account of these cases with an allusion to some others which I have seen, will, I believe, prove interesting. A part of the history of the first case is extracted from the minutes of the New York Pathological Society, before which I exhibited some of the contents of the cyst.

CASE I. *Hæmatic Carcinomatous Cyst.*—John D., æt. 26, barkeeper, came to Northern Dispensary, August 13, 1868, with a tumour on the left shoulder, about as large as a medium-size orange, situated over the clavicle and resting on it, but not adherent, as the mass could be slightly displaced laterally at its base. For several years the patient had a small tumour, about the size of his index, of a brownish colour, indolent and painless, which remained about the same size until eight or ten days before coming to the Dispensary, when, as he states, after roughly feeling the

tumour, it suddenly began to swell, and in the night acquired nearly the size of an orange. The tumour was globular, slightly flattened, perfectly smooth, tense, and of a rather dark purple appearance, having thickly disseminated over its surface superficial and arborescent varicose veins of extreme tenuity, and of a deep vermilion colour. The tumour could be very slightly lifted from the middle of the clavicle upon which it rested. There was no pulsation, vibratory thrill, or impulsion communicated through the tumour. It was distinctly circumscribed, and measured in its antero-posterior circumference a fraction over four inches, and in its transverse  $3\frac{1}{4}$  inches. On plunging an exploring needle into the tumour, there was experienced some resistance, which diminished as the point of the instrument reached the centre of the mass; on withdrawing the shaft a few drops of dark grumous blood escaped through the canula. Afterwards the tumour was punctured with a medium-size trocar, and about  $1\frac{1}{2}$  ounce of the same dark fluid blood evacuated; and on withdrawing the trocar, with a narrow-curved and sharp-pointed bistoury, I divided the tumour antero-posteriorly, and more blood escaped. The remaining contents of the cyst slightly adhered to its walls, and, forming probably, about one-half of the mass, were broken loose with the end of the finger and removed. The substance removed is evidently the product of an exudation having undergone a certain organic development; and on being removed, and before being thoroughly washed of all the blood, looked somewhat like the substance of the interior of the heart, but was much less firm on pressure, and easily broken into separate masses. There was some clot, though not much, adherent to these solid portions of the tumour. Preserved in carbolic acid, it at present offers very much the same appearance and consistence it did at first, but is slightly paler. Examined under the microscope in the fresh state, there were observed (Ocular No. 3, Objective No. 5, Næchet) large, irregular oblong cells, *without nuclei or granulations*, interspersed with a few perfect, and some disintegrated blood corpuscles. Treated with acetic acid, the cells became more distinct, but retracted. The tumour was stuffed with cotton, saturated in equal parts of sweet oil and carbolic acid, covered with oakum, and a slightly compressive bandage. For the first ten or fifteen days the wound appeared to be healing up nicely, but soon there appeared what resembled very exuberant granulations which were touched with nitrate of silver and acid nitrate of mercury. The necessity of a thorough extirpation having been suggested at first and refused, was now urgently insisted upon, but the patient hesitated about submitting to an operation and placed himself under the treatment of some empiric. The growth continuing to increase, he returned to me and reluctantly consented to its excision. But about that time the death of his wife and some other troubles, caused me to lose sight of him; I afterwards learned that he had entered the New York Hospital, where Dr. Geo. A. Peters removed the tumour and presented it to the Pathological Society as an interesting sequel to my report of the case as an hæmatic cyst. Dr. Peters stated, that after my operation, the tumour commenced to grow in the same locality, and at the time of his operation it had attained the size of an orange. Its external appearance resembled very much that described by me, with the exception that from a portion there was pressed out a fleshy looking substance, not disposed to bleed on handling, and resembling muscle. The removal, he states, was accomplished without difficulty. None of the glands in the neighbourhood were involved. On examination by Dr. Krackowizer and himself, after removal, the growth was found to



have undergone malignant degeneration. I then observed that I had anticipated somewhat the future character of the tumour in my report of the case before the Society, and in proof of the statement, I made from the minutes the following quotation, to which Dr. Peters had not alluded, and which has been previously omitted to avoid repetition." Did these cells in this tumour mark one of the phases of fibrinous development of a healthy formative process, or, on the contrary, did they point to an ulterior multiplication of elements, the results of a local perversion of nutrition? In other words, had this tumour been let alone indefinitely, would this apparently exudative product have formed a firm, thick and resisting cell wall to the cyst, of sufficient healthy vitality to have resisted degeneration, incommoding only by the size of the tumour and its pressure on contiguous parts?"

It seems the wound healed principally by first intention, and about the last of November, a month after admission into hospital, the wound was entirely healed, and the patient left. I am unable to state whether or no there has been return of the disease. Dr. Beekman, the resident surgeon, kindly furnished me with some of the particulars of the case, and aptly compared the appearance of a part of the tumour to a mass of turbid calf's foot jelly. Dr. Krackowizer, one of the attending surgeons, obligingly exhibited to me by the accompanying little sketch the appearance of the cells after the excision of the tumour. Properly speaking, these were not cells, but pale transparent and very large nuclei, magnified about 400 diameters. The whole tumour seemed to consist of these nuclei, with scarcely any intermediate substance; and it was hyaline.



There are several interesting features in this case, some of which, I think, particularly merit attention. We observe that the tumour originally was very small, and remained stationary two or three years. Then, in one night, it suddenly increased to a mass of considerable volume. This increase was probably due to the rupture of a small vessel which suddenly poured out a large quantity of blood, giving rise to the rapid formation of an exudative product of peculiar character, which resembled turbid jelly, and formed the very thick peripheral portion of the tumour. The remaining part of the blood extravasated, did not undergo organization, and was accumulated in considerable quantity in the interior of the mass. After drawing off about  $1\frac{1}{2}$  ounce or more of blood with a trocar, a deep incision through the entire base of the tumour permitted me to evacuate thoroughly the remaining dark grumous blood, and all of the jelly-like substance with the end of my finger; and the cavity was stuffed with cotton saturated with equal parts of carbolic acid and sweet oil. The walls of this remaining cavity were evidently formed of condensed adjacent cellular tissue; and from their interior there sprang up a new heterologous growth similar to the first, but apparently of less rapid formation. Another point which possibly may be worthy of remark is, that the first specimen examined by myself, composed of what appeared at the time to be cells without nuclei, were probably large nuclei without a nucleolus. It will be observed that this sanguineous cyst is quite different from those

described by Paget and others. This eminent pathologist (*Lect. on Surg. Path.*, vol. ii. p. 49) alludes to a case where the interior aspect was of a columnar or fasciculated appearance like the right auricle of a heart. But the walls of this cyst were only two or three lines in thickness. In the case before us the blood was accumulated in a comparatively soft, jelly-like stroma, and this was an inch and a half thick, and lined a cavity the walls of which were formed of condensed cellular tissue. This stroma subsequently appeared, from its microscopic character, to be malignant, and I have thought that the term hæmatic carcinomatous cyst might be appropriately applied to this kind of growth.

**CASE II. Hæmatic Serous Cyst over the Inner Aspect of the Knee-joint.**—George W., æt. 45, native of Scotland, was seen by me at the Northern Dispensary a few days after observing, for the first time, the subject of the preceding case. W., who is a very large-framed, powerful man, and a ship-carpenter by trade, was struck on the inside of the left knee by a glancing blow from a large piece of timber drawn on wheels. I did not see him until ten or twelve days after the occurrence of this accident. The inner aspect of the knee was much swollen, and the skin of the lower part of the thigh abraded. A very distinct fluctuation in one part, and the tension and heat of the skin, induced me to recommend him to use poultices, and return in a few days. On his return two days afterwards, he was more comfortable, and the swelling on the inside of the knee was prominent and more circumscribed. With a curved sharp-pointed bistoury, holding the cutting edge up, I carefully, but boldly, incised the tumour—and immediately out gushed a lemon-coloured liquid, instantly followed by considerable blood, which mingled with it. I instinctively wetted my index and thumb with the liquid, and rubbed them together to discover if I experienced the peculiar unctuous feel of the synovial fluid. But I was instantly reassured on this point, and further fully satisfied about the nature of the tumour. I observed that there remained a large cavity, its walls were not collapsed, and I could fully explore it with the finger, which reached almost to the tubercle of the tibia.

The yellow liquid which first escaped after the incision, evidently formed a distinct collection, which was probably separated from that of the blood by only a few meshes of cellular tissue. The knife, in thoroughly dividing the tissues, caused these two collections to commingle.

The antiseptic treatment was applied in this case, as in the preceding. I saw the patient at his home, bandaged the leg, and splinted the joint, and kept him in a horizontal position with the leg elevated. He made a good but tedious cure, and has regained entirely the use of the limb.

The manner in which this last cyst was produced recalls vividly to my mind a certain class of cystic tumours described in the *Arch. Gén. de Méd.* for 1858, by M. Morel Lavallée, under the title of “Épanchements Traumatiques de Sérosité.” I had occasion to observe one of these tumours in 1858, while attached to the service of M. P. Boyer, at the Hôtel Dieu. The cyst was produced by a glancing kick on the back, and was about the size of the fist, and rather flattened.<sup>1</sup> The liquid contained in this cyst was

<sup>1</sup> This kind of blow is sometimes received in a belligerent exercise known among the lower class of Parisians as the “savate.”

of a bright lemon colour, and was, I think, evacuated by M. Verneuil, who had charge of the service at the time.

These cysts may vary much in the colour and consistency of their contents. Sometimes a certain quantity of blood is mingled with the serous effusion, and may be quite thick and dark. There may be also small fibrinous concretions similar to the rice-like products contained in the serous cyst known as ganglion.

The location of the cyst which I saw was about the middle of the back, and rather to one side. This cyst was distinctly circumscribed. Its walls were quite firm, and composed probably of condensed areolar tissue. The mechanism of the production of such a serous effusion was remarkable, but easily explained: There is between the skin of the back and the subjacent muscles a layer of very loose areolar tissue which permits of considerable freedom of motion. By a blow this tissue may be ruptured, and a certain quantity of fluid poured out, which is sometimes pure serum, and at other times blood and serum mixed, and of variable thickness. The constantly sliding motion of the parts (*glissement*) singularly favours the production of these kind of tumours after a glancing blow on the back. The extended article of M. Morel Lavallée contains a number of interesting and illustrative cases.

Dr. Henry Schiff, of this city, has just mentioned to me a case which he saw in 1862, in the wards of M. Vollemier at the Hôpital St. Louis at Paris. The tumour, in this instance, was on the outside of the thigh, and was caused by a glancing blow which the patient had received about a month before. Vollemier, it seems, diagnosticated with confidence a deep-seated abscess, and before plunging his knife into it, said to those who were present, "You will see a tumblerful of pus escape," but, in its stead, out came clear serum.

N. Y., 23 FIFTH AVENUE, Jan. 13, 1869.

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ART. VIII.—*Remarkable Instance of Burns from Lightning.*

By WM. M. HOLTON, M. D., of New Harmony, Indiana.

On the 25th of March, 1868, I was called to see Mrs. E. P., aged sixty-one, who had been for some months subject to indigestion, vertigo, and numbness of the limbs, which impeded walking, and interfered with the performance of her domestic duties, and who had been, thirty-five minutes before I saw her, struck by lightning. I was informed that while she was in an out-building, the lightning had struck and shattered a tree about one foot distant; then leaving the tree, about seven feet from the ground, it had penetrated the wall of the building, which was an unplastered frame one, splitting off part of the corner-post and struck Mrs. P., who was sitting close by, on the back of her head where her hair was "done up" in a knot

and fastened by two ordinary wire hair-pins. The hair was much scorched, and under the knot of hair, the skin was severely burned.

Thence the electric fluid passed down, burning the lower portion of Mrs. P.'s right ear, in which was a gold ear-ring; then crossed the throat and passed down to the left of the sternum. The burn thus produced was about three inches wide, covered with blisters, and the skin for several inches on each side was very red and painful. The fluid here left her body, and finding some other conductor, passed down still on the left side to just above the crest of the ilium, extending thence forward and downward to the symphysis pubis. This burn was about twelve inches long, and about the same width as the first; it was more severe than any other of the burns, except that at the spot where the fluid passed from the hair-pins to the skin. The next burn began on the patella of the right knee, extending to the bottom of the heel, in reaching which it wound around the inner side of the leg. About four inches below the knee was a sound strip of cuticle, an inch and a half wide. The lightning passed off at the bottom of the heel, bursting open the heel-seam of a strongly sewed gaiter boot.

Mrs. P.'s husband found her a few minutes after the accident lying on the floor, insensible, but occasionally uttering a groan. She afterwards declared that she experienced no pain or uneasiness at the time, and knew nothing of what had occurred until she was aroused to consciousness by the free application of cold water, which her husband says was about twenty minutes after the accident. She had much nausea and oppression, and expressed herself much relieved by free vomiting.

When I reached her, about fifteen minutes after the vomiting, she was entirely conscious, and (with the exception of slight delirium while suffering from fever) remained so during the whole of her illness. She was cold, covered with clammy perspiration, and almost pulseless. She was in great pain, and complained that she was "burning up." Brandy was administered, and her pulse soon rallied; the profuse perspiration diminished, and she became more comfortable. Subsequently her wounds were treated by Dr. Edward Murphy and myself, like ordinary burns, with carron oil (equal parts of linseed oil and lime-water), which, as usual, proved a very soothing and cooling application.

Up to this time, June 10th, she has slowly gained strength; her wounds are now cured, and she is comparatively comfortable; her appetite is pretty good, and she is quite cheerful, except when left alone, when she is disposed to sleep too much. A feeling of great lassitude announces to her the approach of a thunder-storm before its coming is perceived by others.

I had hoped that the shock she experienced at the time of the accident might relieve her to some extent of the numbness of which she had previously complained, but these hopes have not been realized, the numbness having increased rather than diminished.

An examination of Mrs. P.'s clothing showed a hole burnt by the lightning in the upper part of her chemise, in front, and in her corset-lining; also several in her flannel petticoat, and in her stocking. The lightning melted portions of the wires of her hoop-skirt; it appears to have passed down the steel of her corset, melting a small part of the lower end of it off. The steel clasp of her elastic garter seems to have acted as a conductor, and thus saved from burn the strip of cuticle before mentioned, and

which was immediately below it. In the same way the steel of her corset, and the metal of her hoop-skirt, appear at several points to have carried off the electric fluid, and thus produced what at first sight it seemed difficult to account for, the detached character of the several burns. Had the wound been continuous from head to foot, a fatal result would have been, in my opinion, inevitable.

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ART. IX.—*Notes of Two Remarkable Cases of Cerebral Injury, followed by Recovery, in one Case resulting in an Entire Change of Character.* By S. C. MENDENHALL, M. D., Frazeysburg, Ohio.

CASE 1.—Nov. 27, 1856. W. G——, laborer, aged 19, spare habit, nervo-bilious temperament, received a severe wound on the right side of the head when sitting on a log a few feet from the end of which a comrade was chopping wood. The axe glanced, slipped out of the chopper's grasp, and struck G—— just above the ear, burying the bit of the axe in his skull. He was carried to the house, only a few rods distant, where I saw him some two hours afterwards. He was almost pulseless; clothing, bed, and floor drenched with blood, which was still slowly oozing from the wound, mixed with brain substance and minute fragments of bone. The cut was horizontal, on a level with the orbit five and one half inches long externally, a little less internally owing to the convex shape of the bit of the axe. A line drawn upward from the external meatus auditorius would almost exactly bisect the cut.

I removed a large number of small spiculæ, found the skull much shattered by the violence of the blow, and not less than two tablespoonfuls of brain on the cloth which had been kept by the side of his head until my arrival. I shaved the scalp adjoining the wound, adjusted the soft parts by means of adhesive strips, directed the application of external warmth to aid the circulation, and administered opium according to symptoms.

Contrary to my expectation he recovered, with no specially interesting points developed during convalescence save a marked and peculiar *change of voice*, which became permanent. But from that time his whole mental and moral nature seemed to have undergone a marked change. *Before* the injury he was a quiet, unassuming, somewhat stupid boy, universally regarded as honest. *Afterward* he became noisy, self-sufficient, sharp, and seemingly devoid of moral sense or honesty. These new traits evinced themselves immediately and strikingly as soon as convalescence was fully established. I much regret that I am unable to trace his history since 1858.

CASE 2.—Private F., Co. G, 76th Reg't Ohio Vols., was struck by a minie ball in the assault on the outworks at Vicksburg, Miss., May 19, 1863. The ball entered the left temple on a level with the eye, about one and a half inch posterior to the external angle of the orbit, severing in its course both optic nerves and passing out of the other temple about one fourth of an inch further back than the point of entrance, but on the same

level. He fell at my feet uttering loud cries, which continued until the stretcher bearers bore him to the rear where Dr. Sabine and myself examined him and applied temporary dressings. Blood and cerebral matter issued freely from both orifices and from his nose; the latter showing that the posterior wall of the frontal sinus was broken. Expecting a fatal issue as a matter of course, my surprise was great when I learned the next morning from the hospital steward that he was living and tolerably comfortable. He was sent in a day or two to the hospital at Haines' Bluff, and as my duties were with the troops at the front, I have no further personal knowledge of the case. I learned, however, that he recovered perfectly so far as general health was concerned, but of course was totally blind. He was mustered out at St. Louis, returned to his home near Jacktown, Licking County, Ohio, and some months after died of inflammation of the bowels, induced by errors in diet. I have recently been informed by several of his neighbours that no change in his mental or moral character was perceptible as a consequence of his wound.

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ART. X.—*Fracture of Skull; Fracture and Dislocation of Humerus of Left Arm, and a Fracture and Dislocation of Elbow of Right.*  
By C. B. FRASER, M.D., of East Saginaw, Michigan.

OCTOBER 11, 1867, I was summoned to a lad æt. about fifteen years, who had been caught by the crank of a balance-wheel in a shingle mill, and was taken up perfectly insensible. Upon my arrival, I found that the patient had recovered somewhat from the effects of the concussion, although he was still pale; pulse, feeble; extremities, cold; his consciousness, however, had returned to a very great extent. Concluding that nature would bring about a perfect reaction unaided, I immediately commenced to examine the patient's external injuries, and found the following: Head, an incised wound, about three inches in length, commencing about the middle of the superior portion of temporal bone, and extending downward, backward, and upward, forming something of a semi-circular flap, about an inch and an eighth at the widest portion, which had been completely shaved off from the peri-cranium. Another fracture (punctured) was found near parietal eminence; and at the junction of the parietal bones with the occipital, a bloody tumour had formed, about two inches in diameter at the base. Body not much injured; on left side of thorax, the cuticle was partially denuded in two places to the extent of about  $1\frac{1}{2}$  by 4 inches. Extremities: a fracture of the external condyle of right humerus; fracture of coronoid process of ulna, and a backward dislocation of elbow; the annular ligament was ruptured, and a dislocation of radius from ulna. Left arm: a downward dislocation of humerus, and upon rotating it after reduction, crepitation was very perceptible at the joint, showing a fracture of the anatomical neck. Inferior extremities were somewhat contused but not fractured.

During the time occupied in making the examination, and the necessary arrangements preparatory to reducing the fractures, and dislocations, reaction had become very nearly established.

In consideration of the extensive injuries, and the shock that would necessarily be produced by the different operations, I administered chloroform, when assisted by Dr. B. B. Ross, of this city, I proceeded to reduce the fractures and dislocations first, so that he could more easily be placed in a favourable position for operating upon the head, without inflicting further injury to the limbs. The right arm, after reduction, was placed upon an angular splint. The left was secured to the side by a body bandage.

We next trephined the skull, after having made a crucial incision, and dissected up the flaps. We found that the pointed substance had penetrated the skull at an angle of about  $50^{\circ}$  or  $60^{\circ}$ , driving before it a portion of external table. I then placed the instrument so that one-half the circumference would be immediately over the fragment. After removing the circular piece cut by the trephine, the depressed fragment was removed with a pair of forceps—it was one-half of an inch long, and three-eighths of an inch wide. The dura mater was entire, as the angle at which the fragment of bone had passed was such, that the membrane had been just accommodating enough to allow it to slide over its surface, some discoloration only having been produced. The wound was thoroughly cleansed and the flaps accurately adjusted.

The wounds were now closed, and, strange as it may appear, not one particle of suppuration occurred in either of them—they all closed by “immediate union.”

After the operation, the patient was removed to a bed, his head elevated somewhat, cold-water dressings applied, the room darkened, and quietness enjoined. The force of the heart's action was restrained by antimonials and salines, and Dover's powder was given each night to secure rest. At the expiration of ten days, the angle of the splint was changed every few days (the anterior hinged one having been substituted at this time); and at the close of the third week it was removed entirely, and passive motion has been made every day or two, up to the present time.

At the expiration of the second week, the body bandage was removed, and the arm allowed to rest beside him in bed.

In about four weeks, he visited me at my office for further treatment, and has been here as often as once a day up to the present time. I have at last succeeded by passive motion, cold donches, and friction, in securing very nearly complete movements of the elbow-joint. The shoulder-joint is, to all appearances, as natural as before the accident.

EAST SAGINAW, MICHIGAN, Nov. 25, 1867.

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ART. XI.—*Compound Comminuted Fracture of both Bones of the Leg, treated by a Special Apparatus devised for the Purpose.* By JOHN P. METTAUER, M. D., LL. D., of Prince Edward's Court House, Virginia. (With two wood-cuts.)

A HEALTHY labouring man, about fifty years of age, had his leg fractured by being crushed between a heavy wagon axletree and the top of a large stump. The bones were comminuted, and the soft parts terribly mangled;

fortunately the arteries of the limb had escaped injury. So greatly were the soft parts injured, that, had the writer seen the case before inflammation supervened, he probably would have advised amputation. Not being called in until the third day after the accident, he determined to make an effort to save the limb, rather than, in the highly inflamed condition of the wounded parts, together with the high traumatic fever, amputate. The limb was restored to its proper length and form by the careful and energetic employment of extension and counter-extension, aided by position on the back, and coaptation of the fragments, so far as attainable under the circumstances.

The extension and counter-extension were kept up by assistants, the limb, from the foot up to the fracture, was smoothly bandaged, thick compresses having been interposed on its sides, and posterior aspect extending from the injured part to a little below the sole of the foot. Another bandage and compresses, arranged in like manner, were applied to the leg above the seat of injury, extending quite up to the knee, care having been taken to place the free ends of the compresses in both cases on a line with the border of the injured part. Short compresses were next arranged and applied to the four aspects of the injured portion of the limb, of lengths merely to fill the space between the long ones, confined by the bandages, and supported by the bandage of strips smoothly and pretty tightly applied.

Three splints, which might be denominated bridged,<sup>1</sup> by reason of their peculiar form, being in readiness were now applied over the long compresses, one on each side, and the third to the under surface of the leg, their upper extremities extending up to the knee-joint, and the inferior below the bottom of the foot a few inches. In these splints excavations were formed sufficient to span the seat of fracture, bridge-like (Fig. 1), and deep enough to afford room for the ready removal and reapplication of the necessary dressings, with the abutments resting upon the free extremities of the long compresses at the borders of the injured portion of the leg. The bottom splint (Fig. 2), at its lower extremity, was hollowed out so as to receive the heel, while a foot-board to support the foot, and movable, was attached by screws to the end of it. The fracture being about the middle of the leg, the

<sup>1</sup> The sketches below will enable the reader to understand the form of the bridge splint, when constructed of wood. Figure 1 represents a side, or rather an edge view of the splint. The angular portions should be thick enough to give strength to the bridge, or it might be broken. Brass would answer better than wood, but in a country practice the latter material will answer very well if the splint is formed of pretty strong tough wood, and not made too thin.

Fig. 1.

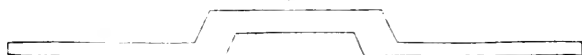
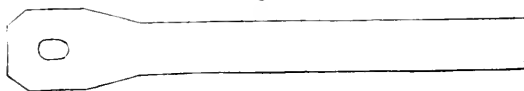


Fig. 2.



The inferior splint is represented in figure 2, where the heel excavation is formed.



bridges were formed near the centre of the splints. The splints were made of seasoned poplar, the writer being both instrument-maker and surgeon. The splints were about two and a half inches wide, except the lower extremity of the bottom one, which was much wider, to allow room for the heel excavation.

The splints being well packed with graduated compresses, were now carefully arranged along the leg, resting upon the long compresses, and securely confined with a strong bandage applied from the foot up to the bridged portions of each splint where it was fastened with a strong pin. The upper portions of the splints were confined in like manner, but with a distinct bandage. The hollow space formed around the fracture by the bridges of the splints was carefully and firmly packed with cotton batting, over which, together with the bridges of the splints, a strong bandage was firmly applied. The bandages used did not exceed two inches in width, and the writer, for many years, has more frequently employed them less than two inches wide, even to the lower extremities, and with decided advantage.

Thus arranged, the limb was placed upon a firm bed. The foot was confined to the foot-board of the splint by a strap. To the bottom of the inferior splint a slat three inches wide and twelve long was fastened by screws transversely, to prevent the rotation of the foot. In this condition the limb was allowed to remain one entire week, refrigeration being used to it chiefly with cold water. The bowels were kept soluble by the daily use of aperients or enemata; the diet was restricted; once daily the packing around the bridged part was removed and replaced. No unpleasant symptom occurred during this period. At the expiration of the week the limb was examined and found doing well in all respects. The dressing of the bridged part, on the injury, was removed to be replaced by a close bandage of strips and packing, which was easily done. The splints were not disturbed, but their confining bandages being somewhat loosened, were tightened, and the limb, in all respects, arranged as at first. On the fifteenth day the entire dressing was removed, the limb carefully washed, and upon examination it was found that very considerable consolidation had taken place in the seat of fracture.

The apparatus was again applied in all respects as at first, and continued for a week, when it was removed and replaced by straight splints, applied in the ordinary way, and these last were continued until complete recovery followed, requiring six weeks in all. The bridged splints, after the wounds ceased to discharge much, being less handy than the straight ones, were dispensed with, but they answered most valuable purposes the first two weeks in keeping the wounded parts clean.

If carefully adjusted, this splint protects a fractured limb as completely against displacement as the ordinary straight one. The basilar compress should be smoothly and solidly formed, and confined in position with considerable firmness and exactitude by the bandage; it must also be so graduated as to receive the splint perfectly before much pressure is employed in fitting the splint. By such careful adaptation, if the reduction is properly effected by the extending, counter-extending, and coaptating forces before the splints are applied, not the slightest derangement of the fragments is likely to follow when this apparatus is put in position.

The writer, to satisfy his own mind that the indications were fully met by it, has on several occasions, after putting on the apparatus, taken the limb up from the bed and shaken it without causing the slightest pain to the patient, or derangement of the limb. This experiment, however, is rather hazardous, and never fails to alarm patients greatly. As yet, the writer has never had cause to regret his trials of this apparatus.

Three other cases of severe compound fracture have been treated upon this plan by the writer with complete success. One of them was, if possible, more unpromising than that here detailed. In this case the apparatus was never removed after its first application until recovery took place, six weeks after the accident occurred. The writer saw the patient twice only—once when the limb was reduced, and once, a week afterwards. He found everything so favourably situated at the second visit that he hoped no further attention on his part would be required, especially as the nurse in attendance seemed to understand the demands now presented by the case, and the writer lived at a considerable distance from the patient's residence. In this case the recovery was also perfect, very slight deformity, if any, following, and the use of the limb entirely restored. It has been more than twenty years since these cases were treated, and since the writer first employed the bridged splint.

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ART. XII.—*Fracture of Femur through Upper Fourth; Delayed Union; Gradual Shortening commencing Two Months after Apparent Union.*  
By JNO. G. BINGHAM, M.D., of Millersburg, Ohio.

On the 28th Oct. 1866, J. U., æt. 37, sustained a simple fracture of right femur, and also severe contusions and flesh wounds, by being thrown from his carriage and dragged some twenty rods by the lines looped over a foot.

After placing him under the influence of chloroform, the fracture was found to traverse the bone just below the trochanter minor. The upper fragment, as nearly as could be estimated, did not exceed three inches in length from the apex of the trochanter major. A long splint was applied, with perineal counter-extension bandage, and adhesive strips were used for extension. Three short splints were also applied over front and rear aspect of the limb for what support they could give. There was no difficulty in extending the limb to its normal length, and the adhesive strips were firmly fastened over the foot-piece of the splint, while the patient was fully under the influence of the anæsthetic; with no appreciable shortening on measuring from the anterior superior spinous processes of ilii to the inner condyles.

Especial care having been given in the application of the dressings to avoid excoriations, and in providing a solid flooring under the mattress, with trap-door through it, etc., the patient was kept very quiet through-

out, and made no objection to the turning of the extension screw, which was rendered necessary from time to time, on account of slight stretching of the perineal bandage. I saw him daily during the first fortnight, and frequently afterward.

On the 2d of Dec. (35 days after the occurrence of the injury), I removed all extension.

Four days later I examined the limb without removing the splints, and found no shortening since the removal of the adhesive extension strips, none having occurred more than one-fourth to one-third of an inch, which had obtained during the first week.

At this time the only thing that gave me any apprehension was the absence of any considerable amount of callus at the seat of fracture. But I had simply passed my fingers under the splints, without removing them.

On the 8th of Dec. (41 days after the adjustment of the fracture), I allowed the splints and bandages to be entirely removed, but being otherwise engaged, was not present.

On the 10th, I was startled by the announcement that, though the limb had seemed to have been "all right" during the preceding day, it was now "broken over" and badly shortened. The shortening was found to be fully three inches, the lower fragment overlapping the outer surface of the upper.

The patient being put under chloroform, an examination revealed but a meagre deposit of callus upon either fragment. After thrusting the ends of the bones strongly against each other several times, and irritating the region generally by rough manipulation, I proceeded again to bandage the limb and apply the splints and preserve extension as before; this time, however, starched bandages were used both next to the limb and over the splints. With the aid of the anæsthetic, I found no considerable difficulty in extending the limb to within one-fourth of an inch of its normal length.

At the end of four weeks the dressings were removed, and everything indicated a proper union, with not more than one-third of an inch of shortening. There was a large mass of callus.

Four short splints with starched bandage were continued for support. Shortly after this period and before the patient had left his bed, he suffered from obstruction of the bowel, followed by enteritis, which confined him to bed for about a month longer.

On the 7th of March, 1867, Mr. U. called at my office, and a careful measurement corroborated former estimates of not more than one-third of an inch of shortening. But, on putting the foot upon the floor, a strange sensation of elasticity was experienced, and described as if the foot were in contact with a soft piece of rubber. No explanation of this eccentricity was offered, but only the decided suggestion to avoid throwing any considerable weight upon the limb so long as such sensation might continue.

About the middle of April (three months after last removal of the splints) my attention was again called to the feeling of elasticity which had uniformly been experienced on placing the foot upon the floor; and also to the opinion of the patient, that the foot did not come so near the level of the other, when standing erect upon the sound leg, as formerly. Measurement disclosed a difference of nearly one inch in length. The idea of submitting the limb to continued extension again, he would not entertain, and the suggestion was not urged upon him.

Subsequently to this date, I examined and measured the limb frequently, and found the shortening to be slowly and steadily increasing, together

with a very apparent hollowing on the inner aspect of the thigh, and increase of bulk in the region of the base of the trochanter major.

There has not been, at any time during the process of shortening, any mobility at the seat of fracture.

By the 8th of September, eight months after the apparently satisfactory union of the fracture by callus, the shortening had reached quite two inches. Since that time there has been no increase of shortening or deformity, but the weight of the body cannot now (Jan. 3d, 1868) be supported by the limb without occasioning pain.

There is no evidence of strumous, scorbutic, or other taint or idiosyncrasy of system connected with this patient; on the other hand, his ancestors and family are rather remarkable for soundness of health and longevity.

It is a circumstance of slight interest in connection with the case, however, that three brothers of Mr. U. and one sister, have suffered from fractures, but in each case adequate force seemed to have been sustained to account for the injury, and there was no unusual feature in reunion of the fractures.

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ART. XIII.—*Laryngeal Tumour removed by opening the Larynx, after the insertion of a tube into the Trachea.* By JOHN L. ATLEE, M.D., of Lancaster, Pennsylvania.

F. McK., æt. 15, small for his age, previously a hearty, robust child; became hoarse about eighteen months before I saw him, in September, 1868, and for the last sixteen months he has not been able to speak above a whisper. In August he experienced some difficulty in breathing, and this steadily increased until his nights became almost sleepless. He also lost flesh at the rate of two pounds a week.

When brought to me, he was voiceless, had a croupy cough, his ordinary respiration, quite laborious; pulse small, frequent, and rather feeble; appetite poor, and the countenance pale and indicating distress. The sounds of the lungs were normal both by auscultation and percussion. The difficulty seemed to be entirely restricted to the glottis. I attempted to use the laryngoscope, but the irritability of the fauces and difficulty of respiration made it impossible to obtain a satisfactory view of the parts. A solution of the nitrate of silver was applied to the glottis, but a spasm was excited that terrified the patient greatly and somewhat alarmed me. I directed the father to bring him to me again in a few days, and in the mean time the finger was to be frequently applied to the fauces, so as to accustom them to the presence of a foreign body. When he returned, on the 29th of September, his respiration was more laborious, indeed so very difficult was it that he was evidently about to die very soon for want of air, unless some means soon succeeded in giving him relief. An attempt

was again made to use the laryngoscope but unsuccessfully, its presence could not be borne long enough for an examination.

I told the father that it would be best to open the trachea, and insert a tube, through which the boy could breathe freely, and thus regain his strength. After that some means would be found of getting at the mischief in the glottis.

On the 3d of October, I opened the trachea and inserted a tube. At this time, he could breathe only by resting his head upon his hands, his elbows upon his knees and leaning very far forward. A mixture of ether and chloroform was attempted to be used by inhalation, but so much spasm of the glottis was excited that it was laid aside. As soon as the air rushed into the lungs he opened his eyes, put his hand on my arm, and nodded his head, evidently very much relieved. The presence of the tube was readily tolerated, and exhausted by previous loss of rest, he almost at once fell into a deep sleep.

November 17, I opened the larynx in the usual way, the patient being partially under the influence of an anæsthetic. On exposing the interior, masses of abnormal tissue presented themselves at the opening, during the efforts of coughing made to get rid of the blood flowing into the trachea. These were seized with the forceps from time to time and removed. Three portions, the first as large as a small filbert, the others the size of peas, were torn from their attachment to the mucous membrane. The ventricle of Morgagni on the left side seemed filled by this tissue. The whole amount removed would fill a large sized sewing thimble. As determined afterwards, it weighed twenty grains.

After thoroughly cleaning the interior, a stick of nitrate of silver was rubbed thoroughly over the whole raw surface, and the external wound was closed by two harelip sutures and adhesive strips.

The tumour removed, on examination, displayed under the microscope the anatomical elements found in epithelial growths.

I saw this patient on the 21st of January. He had entirely recovered his voice, and was going to school. He had been kept from school for a year and a half on account of the loss of voice. When first seen he was pale, emaciated, and rapidly losing flesh. He had become rosy, robust, and weighed 86 pounds, in place of 64. He appeared in every way perfectly well.

ART. XIV.—*Two Cases of Labour, in both of which Hæmatocele of the Labia Pudendum occurred after Delivery, and in one Puerperal Convulsions seemed to be promptly arrested by the administration of a Large Dose of Bromide of Potassium.* By WM. H. GRANT, M. D., of Ossipee, N. H.

CASE I.—September 14, 1867, about 10 o'clock P. M., I was called to Mrs. D., a very small, slender woman, æt. 16, in her first confinement. She had had regular pains for six hours. On examination found the os uteri dilated to about the size of a half dollar; very rigid; the pains continuing strong until 6 o'clock A. M., with little progress. She was put under the influence of a mixture of chloroform and ether. In about a quarter of an hour the rigidity of the os yielded, and the head could be felt presenting. In an hour the head passed below the superior strait, occiput to sacrum, the pains continuing regular; and at 5 o'clock P. M. she was delivered of a male child weighing  $8\frac{3}{4}$  pounds. She took  $\text{ʒvj}$  of ether, and  $\text{ʒij}$  of chloroform, holding the inhaler herself, which was made of a piece of birch bark in the shape of a truncated cone, with a piece of sponge fastened about midway. About two hours after I left her, I was again called, and informed that she was in greater agony than before delivery. On examination found a sanguineous tumour of left labium, the size of the child's head. A fomentation of chamomile flowers was ordered, which relieved the pain, and the next day the size of the tumour was diminished; the third day it was opened, and discharged a large quantity of coagulated blood and serum. Fomentations were continued for a few days, when the tumour all subsided, and she got up very quickly.

CASE II.—A few minutes before the subject of Case I. was delivered, her sister-in-law, then just nine months advanced in pregnancy with her first child, came into the room, and remained a few minutes. She became very much excited, and that night was seized with a severe chill, after which she did not feel any motions of her child. I was called to attend her on the 27th September, at midnight, when she had suffered regular pains about eighteen hours. She was a short, very fleshy woman, weighing 160 pounds; eighteen years of age. On examination found head presenting at the superior strait, occiput to sacrum. Not having been informed of her having experienced chills, and since that time she had not felt any motions of the child, I trusted the case to nature. The pains were very strong and forcing, and towards 3 o'clock A. M. the bag of waters broke, relieving her of an enormous quantity, and very perceptibly diminishing her size. The pains now became more severe, and not being able to prevent her from striking and biting every one who came near her, she was, about 5 o'clock, put under the influence of an anæsthetic, as in the first case, using the same apparatus, and allowing her to hold the inhaler.

In the evening of the same day the head had not passed below the superior strait, and was firmly impacted. By the use of the vectis the occiput was brought down, and its shortest diameter occupied the longest diameter of the pelvis. It made very slow progress from this time until the morning of the third day, the occiput then occupying the hollow of the sacrum. About this time the anæsthetic gave out, and no more could be obtained, she having used  $\text{℥xvj}$  of ether, and  $\text{℥vj}$  of chloroform. She was now as uncontrollable as before, and it was impossible to apply the forceps. She was, however, delivered by the natural process about 11 o'clock P. M. of a male child weighing  $10\frac{3}{4}$  pounds, in an advanced stage of decomposition. She lost a large quantity of blood, and during the time drank several gallons of water, which was immediately rejected, until it became necessary to allow her a few swallows only occasionally, notwithstanding her earnest entreaties for more. In about three hours after I left her, was again called, and found her in convulsions. As soon as possible she was made to swallow 20 grs. of the bromide of potassium in solution, when the convulsions ceased. The medicine was continued in 5-gr. doses through the night. The next morning she was in great distress, and, on examination, I found both labia the seat of sanguineous tumours the size of a man's fist. These were treated with fomentations of chamomile flowers, and entirely subsided in about a week. The day after delivery, the abdomen became very tender and painful, with a quick, hard pulse, and high fever. A large soap poultice was applied over the whole abdomen, and the veratrum viride, with spts. nitre, administered every four hours. The next day the symptoms were all more favourable, and she gradually improved, with the exception of complete paralysis of the sphincter of anus and bladder, passing the contents of both involuntarily; from this she has but partially recovered up to this date, January 23, 1868.

OSSIPEE, N. H.

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ART. XV.—*Cancer of the Rectum and Liver, with Stricture of the Rectum; Death; Autopsy; Diagnosis confirmed by the Microscope.* By A. M. WILLIAMS, A.M., M.D., of Springborough, Crawford County, Pennsylvania.

THE following case is related with the object of throwing some light upon the pathology of a most interesting disease, and with the hope of showing some points of rare interest which have been overlooked:—

O. B., aged 53, a retired merchant, but in early life a very hard labourer; temperate, and the head of a large and influential family; tall, and of more than ordinary physical development, came under my care in January, 1868, having been under treatment by another physician of a neighbouring town.

The symptoms presented at this time were vague, but mainly dyspeptic. Bowels somewhat constipated, though readily operated on by cathartics; tongue furred, appetite somewhat capricious, and digestion evidently feeble. The main treatment at this time was that usually employed in atonic dyspepsia. There was noticed a slight, and *only* a slight degree of jaundice from time to time, and an oppressed feeling in the right hypochondrium; but neither of these conditions were constant.

The hepatic trouble was closely watched, and a careful examination, with the advice and counsel of other physicians, failed to develop anything more than a congested state of the organ, and there was but slight increase in its size. His symptoms at times subsided almost wholly, so that for a week or two he was able to walk about and attend to his business very comfortably.

On the 3d of April he was seized with a severe circumscribed pain, below and to the left of the ensiform cartilage, with much tenderness, considerable prostration, and a little fever. The bowels were at this time constipated. I ordered a dose of oil, applied a small blister, and, after the bowels were evacuated, powders of bismuth subnit., calomel and opium, and in twenty-four hours had the satisfaction of seeing a marked improvement. The pain and tenderness left entirely, and under the use of a dinner-pill the patient improved daily, and was able to ride out for some time. There were, however, occasional attacks of pain in the lower border of the right hypochondrium, which always gave way *suddenly*, and the sensations of the patient were expressed as of "something breaking." This was always soon followed by a discharge from the rectum of a dark bloody matter, and thereafter the evacuations were natural, both in frequency and appearance, until another attack. These occurred about once a fortnight.

At this stage I unfortunately lost sight of the case, as the patient was induced to try a "Healing Medium," who pronounced the case one of *gastric ulcer*, and confidently promised a cure. He was treated by this individual a month, with no permanent amelioration in his condition, being sometimes very low, and at others comparatively well. About the middle of June he discharged the "Medium," and sent for Dr. Ely, of Girard, a very reputable and experienced physician. I was called in consultation, and by the advice of Dr. E. again took charge of the case. The symptoms had now become aggravated, and in some respects changed, and on questioning the patient Dr. Ely was led to suspect trouble in the rectum. A digital examination enabled him to feel, as he thought, a tumour just within reach of his finger. My own finger being longer than his, I was able to assure him as to the correctness of his opinion, and had no difficulty in detecting a firm, hard knob, apparently on the anterior and right side of the gut, and about this knobby, teat-like projection the tissues seemed soft and flabby.

Very offensive periodical discharges from the anus were at this time occurring, consisting of a mixture of blood, pus, and mucus. Exceeding difficulty was experienced in keeping the bowels open, though enormous quantities of peculiarly offensive flatus, constantly passed off. We now thought proper to call in Dr. Hubbard, of Ashtabula, Ohio, a former acquaintance of the sufferer, and a man of extended experience, sound judgment, and thorough education. A careful survey of the case resulted in the diagnosis of cancer of the rectum.

Up to this time there had never been severe pain. Large injections were frequently used, and were painless. The local use of iodine by enema



was resorted to, with the hope of effecting permanent good, provided we were mistaken in supposing the growth malignant. Its only observable effect, however, was a diminution in the degree of fetor of the discharges.

The patient became very cachectic, and was confined to bed most of the time. The constipation became more obstinate, and pains of an almost pathognomonic character in the left iliac region harassed the patient. Jaundice was scarcely noticeable, though the stools were wanting in bile. An effort was repeatedly made to pass an O'Beirne rectum tube. It readily glided past the projecting portion of the tumour (the passage being behind and to the left); but after doing so it met with firm resistance, and all efforts to overcome this resistance were fruitless.

The question as to whether this difficulty arose from the presence of a larger portion of the tumour, or in a stricture proper, was not satisfactorily determined; but it became evident that, whatever the cause, the obstruction was becoming pretty complete.

The constipated condition of the bowels became more and more distressing, nothing being passed during one, two, or three weeks; but after *one* stool was discharged the bowels usually emptied themselves rapidly in the course of a day or two, when the difficulty again became marked. The liver now began to enlarge, and did so with great rapidity, and to an enormous extent, occupying at times almost the whole abdomen, but varying greatly from week to week. I could detect at times an elevation on its surface, as I thought, but was not satisfied as to its nature and extent. The constipation was not affected by laxatives or purgatives, but was only overcome from time to time by *nature*, when the bowels were very full, and the pressure from above great. The stomach varied in its ability to retain food, being apparently governed very much in this respect by the state of the bowels. When they acted properly the stomach bore food well, and when they were closed, vomiting was frequent, the ejection consisting of the matter taken as nourishment, with quantities of mucus, and often bile. Toward the latter part of his illness I may remark that both the matter vomited and the gas from the stomach had a very remarkable and offensive odour and taste.

At times there was a troublesome cough, and a considerable expectoration of somewhat tenacious mucus; but a careful exploration failed to reveal any serious pulmonary disease, and I attributed the cough mainly to the encroachments of the liver. There was more or less pain and uneasiness in the right hypochondrium, with some tenderness; but this was usually trivial compared to that which was felt in the left iliac region. This latter pain became so severe that a resort to the hypodermic syringe was deemed advisable, anodynes by enema being insufficient to control the pain, and stomachic doses being rejected. I began with an injection of 5 gtt. of the solution I usually employ—viz., morphiae sulphatis gr. ij, aqua f5j. It was first injected into the left thigh. Finding the dose insufficient, I gradually increased it to 10, 15, 18, and even 20 gtt., and at intervals from five to ten hours, sometimes injecting it into the arms, sometimes the thighs, and again in the left hip. I perceived no difference in the effect, or in the time it took to produce the effect, in different parts of the body. The only effect that I ever perceived in this unusually free use of the agent was its anodyne effect, and an immediate increase in the patient's strength, which increase lasted so long as the pain was controlled. I may add that it was only by this somewhat heroic use of morphia that I

was able to secure for my patient any comfort or rest. This indeed was the major part of treatment during the last two months of his life. He took a regular but limited allowance of spirit, in the form of wine and brandy, and food of such nature as was most digestible, and at the same time nutritious, in such quantities as could be borne. His decline was steady, emaciation progressive; but his mental faculties were remarkably well preserved to the last. Death occurred on the 7th of December. He had expressed a desire that a post-mortem examination should be held, and any details of interest placed on record *pro bono publico*. He arranged the manner of holding it, and expressed a choice as to who should be present; but all the physicians, save one, aside from myself, failed to attend. Dr. Hough, of Conneautville, and Dr. Lefevre, of this place, were present, however, to witness it, on the evening of December 8th.

*Autopsy.*—An incision was made from the ensiform cartilage to the symphysis pubis, and another at right angles to this through the umbilicus, and the flaps turned back. The large and small intestines were filled with extremely hard, dry feces, giving the intestines the appearance and feeling which would present itself if they were filled with stones. On tracing the colon down as far as its termination in the rectum, we observed a narrowing in the canal at this point, where it was externally no larger than one's little finger, and here was found a firm, dense stricture, about an inch in length, the passage being so small as scarcely to admit a small crow quill.

Below and continuous with this was a softened, thickened, ragged, and and ulcerated mass, occupying the inside of the gut, the ulceration having almost opened through into the peritoneal cavity. On the anterior and right side was a more prominent hard portion, forming a knob, which was the point felt by the finger during life. The mucous membrane was almost wholly destroyed, and for some distance ragged and black. The aspect of this mass was most decidedly cancerous, and is well portrayed by a cut in *Ashton on Diseases of the Rectum* (p. 232). I would also call attention here to a case narrated in the same work (p. 229) of rupture of the bowel, under circumstances similar to the case in hand. Injections I avoided toward the close of life; because it was feared the distension and efforts at expulsion might lead to this fatal accident; and the autopsy revealed how well-grounded were those fears, since ulceration had progressed so far that a very trivial strain would most certainly have produced rupture, and consequent death.

The liver was enormously enlarged, and filled with tumours of a yellowish-white colour, varying in size from that of a chestnut to that of a hen's egg, soft, and composed apparently of granular fat. Some of these were imbedded wholly in the liver substance, others reached the surface, and others again projected above the general level. Those which approached the surface presented externally a radiated, decidedly cicatricial appearance. These tumours were confined to no particular portion of the organ, but were distributed throughout. The hepatic tissue intervening was in some parts quite normal in appearance. There were strong adhesions between the liver and parietes, though these were no more marked over the tumours than elsewhere, but evidently the product of a general inflammation. The gall-bladder was much enlarged, and distended with bile. One of the tumours was so situated as to partially interfere with the ready flow of bile through the ductus communis. The spleen was

somewhat enlarged, but otherwise normal in appearance. No examination of the contents of the thorax was permitted. There was no ascites; in fact, the amount of fluid in the peritoneal cavity was very small. Edema of the lower limbs, especially the left, was very marked for some time previous to death. The other abdominal viscera presented nothing abnormal.

Specimens from the liver and rectum were forwarded to Dr. James Tyson, of the University of Pennsylvania, for microscopical examination, and I subjoin his report:—

"I have examined the specimens you sent me—portions of the rectum and liver—and *have no doubt of their cancerous nature*. The cellular elements in portions of the rectum were eminently characteristic, presenting large multinuclear cells, containing three and even more nuclei, all large in proportion to the size of the cell they occupied. In addition, there were cells of varied shape, containing a single large nucleolated nucleus. There were also many free nuclei, resulting probably from disintegration of other cells as this was advanced. The degree of degeneration of the cells was various, all more or less granular, while there were many granule cells. The microscopic appearance of the liver was not nearly so marked. Disintegration was so complete that but few cells remained. There was sufficient, however, when placed in connection with the microscopic elements in the rectum and the history you gave, to suffice for diagnosis. I could find none of the large multinuclear cells in the liver. There were, however, what I sometimes call "club-shaped" cells, with a single nucleus in one end, quite characteristic, as well as caudate cells less so. There was, of course, marked fatty degeneration, and much free granular and globular oil."

The above case is one of great interest in its clinical history, and shows the value of the microscope in confirmation of diagnosis. This last point I value from the fact that in the present case it speedily set at rest the malignant onslaughts of certain unprincipled and irregular practitioners and their adherents, and upheld the decision arrived at by a studied investigation, and the best medical council within reach, as to the nature of the disease. The stricture of the rectum (which was undoubtedly *caused* by the cancer), or the hepatic cancer, either one alone, would have sufficed to produce death.

It will be noticed that up to a late date there was nothing to indicate disease of the rectum. There was no pain here until about the middle of September. As to the liver, the pain here was never so marked as would naturally be looked for, and the enlargement never was striking until after the disease of the rectum was observed. There was never much jaundice, notwithstanding the serious interference with the hepatic structure and functions. The weight of the liver was estimated at twelve or fifteen pounds.

ART. XVI.—*Case of Death from the Bite of an unknown Venomous Insect.* Reported by ALBERT L. GIBON, M. D., Surgeon U. S. Navy, U. S. Hospital Ship "Idaho," Nagasaki, Japan.

THE following case of fatal poisoning, the probable consequence of the bite of a venomous insect, may, perhaps, possess general interest :—

About seven o'clock on the morning of September 26th, 1868, Dr. Guilherme Maria Mayer, Surgeon of the Portuguese corvette "Sã da Bandeira," came to the "Idaho," and requested me to visit, in consultation, one of the officers of his vessel, whose condition appeared to him very alarming. Repairing on board, I found a young man about twenty-two years of age, of delicate physique, lying in his bunk comatose, his pupils dilated but not entirely insensible to light, his breathing slow and laboured but quiet, his pulse frequent (130), regular, soft, and rather fuller than natural, his surface very slightly cool, his left hand enveloped in a poultice, on removing which I discovered a small suppurating wound on the palmar face of the middle finger, opposite the articulation of the first with the second phalanx, some swelling of the hand, a faint trace of red line half-way up the forearm, and a scarcely perceptible enlargement of a lymphatic gland at the bend of the elbow, and of one in the axilla.

Dr. Mayer's note supplies the history of the case to this point. On the 22d of September, Mr. S. consulted the doctor about a pain which he experienced on the palmar face of the middle finger of his left hand. Examination revealed a small dark point at this site, which seemed to have been caused by the prick of a perforating body, such as a thorn, though the patient had no recollection of having received such an injury. He had been on shore the same day bowling, and remembered that his finger had felt a little stiff while he was playing. It was slightly inflamed, and a flaxseed poultice was applied to it.

*Sept. 23.* The inflammation had increased and extended, and the dark point mentioned was elevated by a small purulent accumulation. An incision was made into it, evacuating a quantity of laudable pus, and poulticing was continued.

*24th.* The wound still discharging a little pus, the hand less inflamed, and some pain still experienced, though not so much as before. The same treatment was continued, a quantity of ol. amygdal. dulc. being added to the poultice.

*25th.* The inflammation had subsided still more; the wound continued to discharge pus; and the patient declared that he felt scarcely any pain. He complained, however, of a marked loss of appetite, so much so that his room-mate had great difficulty in persuading him to take a little broth. This continued all day, and was accompanied by a sense of weakness and fainting, and towards evening by dyspnoea, the patient frequently making long deep inspirations, and placing his hand over the pericardium. At 9 h. 25 min. P. M. he became very much agitated and complained of thirst, dryness of the throat, and difficulty of swallowing. His tongue was moist and of natural colour; his pulse was frequent. A sulphuric acid drink was prescribed and sinapisms applied to the soles. At 10 h. 30 min. his agitation had increased and a mild delirium set in. Sinapisms

were applied to the calves. At 12 he attempted to pull off the mustard applications, then became tranquil and passed the night more quietly.

At 4 A. M. of the 26th his excitement was renewed, and after an access of furious delirium, during which his messmates and attendants could scarcely restrain him in his bunk, he fell into a profound stupor, in which condition he remained until I was requested to see him. Not knowing how far the local affection had determined the general nervous disturbance, I immediately made a deep incision through the length of the finger to the bone, evacuating only a few drops of ill-looking pus, and occasioning scarcely any hemorrhage from the whole extent of the incision; the operation exciting reflex movement of the limb. Careful examination of the hand satisfied me that the amount of local inflammation was not sufficient to explain the alarming condition of the patient, and I suspected from the dilatation and partial immobility of the pupil, the dyspnoea, dysphagia, and dryness of the fauces, which had preceded the cerebral symptoms, that the patient was under the influence of a poisonous dose of some sedative narcotic, but his room-mate, who had been with him all the time, insisted that this was impossible, since the inconvenience he had suffered up to the very occurrence of delirium had been so slight that he had no inducement to take anything to allay his pain, even had it been within reach, while Dr. Mayer and his assistants further assured me that neither any preparation of belladonna nor atropia, nor any other narcotic had been prescribed, or was within access by the patient. I enveloped the whole hand in a large warm poultice, saturated with tincture of opium, applied blisters to the calves and forearms, sinapisms to the epigastrium and nape of the neck, and administered brandy and water as rapidly as it could be swallowed, deglutition being still very well performed, and ordered a stimulant enema which quickly produced a copious fecal dejection.

At 9 A. M. no improvement had taken place in his condition, and I sent for Dr. White, of the "Ashuelot," and Dr. Kidder of the "Idaho." The temperature of the skin was then almost normal, except in the lower extremities, which began to be sensibly cool. Unconsciousness was complete; the pupils were dilated and quite insensible to light; there was no congestion of the face, or any injection of the conjunctiva; respiration was laboured, at the rate of sixteen inspirations to the minute; the pulse was soft, small, and one hundred and thirty-six; the lips were of their natural colour; the tongue was dry; there was no sensibility of the epigastrium or abdominal walls; no spasmodic movements of any of the muscles; but a decided closure of the jaws. Both Drs. Kidder and White at once declared that the patient was under the influence of a sedative poison. The same general course of treatment was continued. Bottles of hot water were placed to the soles of the feet, and along the insides of the thighs and legs. Brandy was administered in as large quantities as could be taken, and on the coma becoming more profound, and the difficulty of inducing deglutition greater, it was thrown through an elastic tube high up into the large intestine, in the form of milk punch containing five grains of carbonate of ammonia to the ounce, with the effect of speedily exciting large liquid stools. The propriety of administering opium was discussed and decided negatively. At 10 A. M. a slight movement of the inferior extremities seemed to indicate that the blisters were taking effect, and thirty minutes later the right hand exhibited partial and temporary tonic contraction. As the upper extremities lost their temperature, bottles filled with hot water were applied along their extent, and when no more stimu-

lants in quantity could be swallowed, pure brandy was slowly dropped upon the tongue, and gaseous ammonia allowed to be inhaled. The respirations which were almost noiseless, became gradually slower; the pulse was regular though smaller, until soon after twelve o'clock, while I had my ear on the chest, the heart suddenly ceased and the patient soon succumbed.

There was no disagreement among the physicians present as to the fact that the patient had died exhibiting symptoms of sedative narcotic poisoning, and in the face of Dr. Mayer's positive assurance that no agent capable of occasioning such could have been received into the stomach, there was only one conclusion at which we could arrive, that it had entered the system at the wound in the finger, which might have been inflicted by some venomous insect. In this view Dr. Vedder, late Surgeon U. S. N., and now resident at the Court of Prince Chosin, also concurred, though neither himself nor any of the Japanese physicians, of whom I have made inquiry, are aware of the existence of any such in this part of Japan; but the "*Sã da Baudeira*," had recently visited Timor and Luzon, where the scorpion is an object of peculiar dread, by both the natives and resident foreigners, the latter of whom always keep an antidote on their tables to apply on being stung. A few days before Mr. S.'s death, a strange insect was found and killed in one of the officer's state-rooms, without attracting especial attention. It is possible that this insect, received on board in green firewood, at Manilla or Dilly, had only recently been disturbed, wandered into Mr. S.'s room, and wounded him during his sleep. The amount of local injury would have been trifling, although a quantity of venom might have been introduced sufficient, after a few days, to vitiate the whole mass of the circulating fluid, when its effects primarily manifested themselves upon the nervous centres. Mr. S. was of a delicate habit, and his vital powers had been further reduced by the depressing influences attending a two years' residence aboard the "*Sã da Baudeira*," a steam sloop-of-war, during which period, he had, at various times, been ill with furunculons eruptions, diarrhœa, fever, epistaxis, and very lately, erysipelas of the right foot.

## TRANSACTIONS OF SOCIETIES.

ART. XVII.—*Summary of the Transactions of the College of Physicians of Philadelphia.*

1868. May 6. *Simple Form of Inhaler for Ether, &c.*—Dr. A. H. SMITH called the attention of the College to a simple form of inhaler for anæsthetics which he had been using for some time past with great satisfaction. It consisted of an ordinary India-rubber ball, lined upon its inner surface with patent lint. A large-sized ball, about six inches in diameter, such as is sold in the shops for foot-ball, has cut in any portion of its surface an opening large enough to receive the face from the orbits to the chin, a notch being cut in the upper edge to receive the bridge of the nose, thus giving an aperture into which the whole face can be fitted closely, and any air excluded if desired, without the eyes being covered. A piece or pieces of patent lint are then sewed upon the whole internal surface, the prominences of the seams in which give a firm support for the stitches without penetrating the wall of the ball. Thus completed we have a simple, cheap, and efficient inhaler, giving the combined advantage of rapidity of action with economy of anæsthetic fluid. It furnishes a large evaporating surface for supplying vapour to the respiratory organs, and at the same time its covering of gum prevents the escape of any vapour externally, thus obviating any waste of material. So fully is the anæsthetic economized, that complete unconsciousness has been produced with a fluidrachm of the mixture of one part chloroform to two of ether (by measure), and by a half ounce of pure ether, in very much less time than by any other method. It is very portable, easily rolled up and put into the pocket, and will last for a long time in constant use. In obstetric practice, where a prompt and certain effect is wanted in lulling transient pain, it is exceedingly useful. In selecting a ball, one with thin, flexible walls is much to be preferred.

June 3. *Numerous Amputations for Gangrene on the same Subject.*—Dr. FORBES read the following communication, the particulars of which were given him by Dr. PREVOST, in whose practice the case occurred:—

A. Villasinon, a native of Zacatecas, Mexico, forty-six years of age, and a miner by occupation, suffered amputation of the extremities at the dates indicated. Each operation was for gangrene.

April, 1849, when twenty-five years of age, great toe of left side.

May, 1856, tarso-metatarsal articulation of same side.

May, 1857, below the tubercle of left tibia.

October, 1858, just below the lesser trochanter of left femur.

April, 1861, great toe of right side.

May, 1863, below the tubercle of right tibia.

May, 1864, just below the lesser trochanter of right femur.

May, 1865, index finger of right hand.

In each of the attacks of gangrene the amputation was performed after the lapse of from five to seven weeks; in every attack there was intense pain from its inception until the removal of the part by amputation. After the operation the recovery in every case was complete, and without any untoward symptom. The large arteries were always found to be healthy at the point of amputation. Chloroform was used on each occasion. At the operation for amputating the right femur the man had taken so much opium that after inhaling two ounces of chloroform without the slightest effect, it was deemed advisable to suspend the operation for twenty-four hours, and stop the opium in the mean time. The following day two drachms of chloroform were found sufficient; when the opium was stopped the man suffered great pain.

This patient is now living, and appears to be in excellent health; he is quite fat. He is the father of a number of children; all of them died soon after birth. He was the subject of syphilis in early life. His means of support have always been good. He has had no return of gangrene since the amputation of his right index finger in 1865, nor could he discover any cause for his previous attacks.

*Case of Thrombosis.*—Dr. WALTER F. ATLEE reported the following case of this:—

May 28th, I was called to Mrs. R. C., aged forty-eight years. She was a fleshy woman, with the appearance of sound health, for whom I had several times prescribed in the course of the past winter, on account of loss of appetite, and deranged digestion. The day previous, in the afternoon, after unusual exertion, and *greatly* overheated, she had *put up* twenty-one loaves of bread; she was suddenly called to a neighbour, who unexpectedly had given birth to a child, and needed assistance. On reaching the top of a flight of stairs, she felt something sounding in her head as “if a gong were being struck there,” she lost power over her limbs to such an extent that she had to be brought home in a carriage; and vomited continuously.

When I saw Mrs. C. the next morning about 8 o'clock, she could not move her head on account of dizziness; the retching was constant, and loss of power was complained of in the limbs, though she could move them, and they had their normal sensations. The face was greatly flushed, and the pupils very much contracted. A very careful examination was made of the heart by auscultation, but no abnormal sounds were perceptible. Ice in small pieces was ordered to be kept in the mouth, and the vomiting had ceased when I saw the patient again in the middle of the day. In the evening she told me that she had slept a good deal in the afternoon, and felt much better.

The following day, the 29th, she was so much relieved that I saw her but once. She was able to hold up her head, and to take some food.

On the 30th, at three o'clock in the morning, she awoke out of a sound sleep, with a pain in the whole right lower extremity, which I believe excelled in severity any suffering I have ever witnessed. She said the limb was on fire; “that needles were sticking in every part;” that she “had cramp in every muscle,” &c. &c. There was no contraction of the muscles, and nothing to be observed on examination to account for this con-



dition, until, recollecting some accounts published of the pain in certain cases of thrombosis, I found that I could detect no pulsation in any artery of the limb, not even in the crural, under Ponpart's ligaments. The skin felt, too, decidedly colder than it did on the sound side, and a thermometer held against the inside of the thigh marked  $87^{\circ}$ , while on the other it marked  $93^{\circ}$ .

In the course of a few hours, the limb became discolored from half way down the thigh to the toes, as if rubbed with lees of port wine.

The pain was unrelievable, except for a short time, immediately after the injection of a grain of morphia under the skin, and the simultaneous administration of chloroform. In this way she would remain unconscious for an hour or thereabouts. There was some lessening of the pain also, when the limb was immersed in warm water, and it was kept therein until her death.

She died on the afternoon of June 3d, the same horrible pain continuing to the last.

The leg was then black, and somewhat swollen, as far as half way up the thigh, where the skin by degrees took its normal colour.

I would add that Dr. Norris was kind enough to see this case with me on the first of June. He could detect no abnormal sound to the heart.

It may be well to say, that the patient was still menstruating, and in fact commenced to menstruate at her regular period, on Saturday afternoon, the day of the plugging of the artery.

After death a partial examination of the body was allowed. The main artery was exposed from above the bifurcation of the common iliac to midway down the thigh, and removed from the body. About the origin of the profunda the vessel was redder than elsewhere, with evident thickening of the walls, and, when opened at this place, it was found blocked up by a fibrinous plug.

An examination of the heart was refused. The specimen was placed in the Museum of the College.

*Aug. 5. Cause of Doubtful Diagnosis of Presentation in Cases of Labour.*—Dr. GOODELL reported a case of labour:—

The child was a male, the mother a healthy primipara, and the labour normal; position L. O. A. At an early stage of the labour the liq. amnii dribbled away, but so green in colour as to lead to the suspicion of a breech presentation. After birth this green fluid was found to proceed from the child's mouth, whence it continued to ooze in varying quantities for five days. Taking hardly any nourishment, the child lingered for three weeks in a state of rigid opisthotonos, and died a loathsome mass of ulcers. Dr. Goodell further stated that he had met with a similar green discharge in a case of face presentation, which obscured the diagnosis very much in the earlier stages of labour. The head was delivered by the vectis, but the abdomen was so distended by an hypertrophied liver that much difficulty was experienced in bringing down the arms and delivering the body. This child was a large well nourished male, but died thirty hours after birth. The green fluid constantly oozing out in large quantities from the mouth. In both there was this peculiarity, that this fluid was neither coughed up nor vomited up, but steadily oozed out of the mouth.

In neither case was an autopsy made.

*Death from Rattlesnake Bite*—Dr. E. B. SHAPLEIGH gave the following account of a case of rattlesnake bite, which occurred in this city:—

An intelligent German, Mr. B., the keeper of a beer saloon, called Zoological Garden, on Ninth Street above Noble, had been in the habit for many years of petting rattlesnakes. He was familiar with their habits, and had full knowledge of the danger of their bite. Some years ago he had been bitten. Whisky and caustic were the remedies which he believed then saved his life. A week before the fatal accident I am about to record, he had received a large rattlesnake from the South. Every day he fondled this reptile, though it was very active and in a state he knew to be dangerous.

On the afternoon of July 31st, 1868, some gentlemen having called to see the new pet, Mr. B. attempted to take the snake from its wire cage, when it struck and fastened upon the side of the fore finger of the right hand, directly over second joint. He at once hurried to the drug store of Dr. Everson, nearly opposite, sucking the wound as he went. The Doctor had often warned him of his danger, and now seeing him come with his finger to his mouth suspected the trouble, and got ready some strong nitric acid, which was freely applied within two minutes after the accident. The unfortunate man then returned to his saloon, drank large quantities of liquor (exactly how much, I could not ascertain) and made a verbal will, saying that he should soon die.

When I entered the saloon twenty minutes after the accident, he was walking about flushed and excited, and in his sound hand held a tumbler half filled with brandy or whisky. He greeted me with some such expressions as, "It is no use—I am a dead man—I feel it in all my veins—tingling in the veins of my whole body, but worse in right arm and leg; liquor is the only remedy, and it does me no good." He seemed like one excited by liquor, but he did not stagger nor did he talk incoherently or in an unreasonable manner. The finger was dead white, as if frozen, and was constantly quivering; the hand and lower half of the forearm were much swollen. A fillet was immediately passed around the arm above the swelling, an incision made through the wound and caustic potassa freely applied. No pain followed knife or caustic. The skin of the swollen hand was punctured in many places, very dark blood oozing out with relief to the swelling. Ten minutes after my arrival, on attempting to rise from his chair he fell prone on the floor. He was placed upon a lounge—grew rapidly livid, and stertorous breathing ensued. He died in about forty minutes after having received the bite. The last observable motion was the quivering of the wounded finger.

*Nov. 4. Case of Disease resembling "Phlegmasia Alba," in a Male Patient.*—Dr. J. C. MORRIS reported a case, now under his care at the Episcopal Hospital, and exhibited the patient, whose history (condensed from notes kindly taken by the resident, Dr. Barton) is as follows:—

D. M., aged nineteen, born in England, of healthy parents, came to this country when two years old, and enjoyed good health up to the commencement of the present disease. He worked as "roller" and "puddler" at an iron works for four years, and then went on a canal boat for six or eight months. About a year ago, he found one morning that his right leg and foot were swollen so that he could with difficulty force his boot on; he had no pain or other sickness. The next day the leg

was so much swollen as to prevent his getting his boot on at all, and the enlargement continued increasing for a week, at the end of which time the limb attained its present size, which it has since retained, with slight fluctuations. He was admitted to the Episcopal Hospital, Sept. 29th, 1868. The circumference above the knee was nineteen inches, below the knee twenty inches, at the ankle seventeen inches. The left leg was also somewhat enlarged. General appearance healthy, heart normal, and no signs of disease of liver or kidneys are perceptible, except a few waxy casts in the urine. No glandular enlargements to be detected in the abdomen or neck. The limb scarcely pits on pressure, the skin and temperature normal.

He was directed to keep the recumbent position and to take infusion of juniper berries with cream of tartar freely. Under this treatment the swelling diminished considerably, so that by October 8th the circumference of the ankle was thirteen inches, and below the knee, that of the leg, was seventeen and a half. On the 12th, several small vesicles made their appearance on the anterior and inner surface of the thigh, which soon gave exit to a fluid which flowed at the rate of nearly a pint in twelve hours. The resemblance of this fluid to milk was most striking, when first discharged. On standing in a test-tube it coagulated spontaneously in a short time, but the coagulum had nearly disappeared the next day, while a layer of cream-like fluid had collected at the surface. The microscope showed the presence of a number of lymph-cells (or white blood-corpuscles) and fatty granules of irregular outline, closely resembling urate of ammonia, but soluble in ether, the evaporation of which gave a residue of ordinary fat globules.

The flow of this liquid continued from numerous small openings until October 17th, when he had an attack of erysipelas which yielded promptly to salines and iron. On the 28th, a similar discharge occurred again for a few hours. The measurements of the limb are now nearly the same as when he entered the hospital.

Dr. Morris believes the case to depend on some obstruction to the lymphatic vessels ascending from the leg to form the thoracic duct in the neighbourhood of the lower lumbar vertebræ, as this alone would account for the occasional swelling of the other leg. But no evidence of disease in this region can be detected by palpation.

Dr. Wood suggested its being possibly due to disease of the liver, as it recalled to him a somewhat similar case at the Pennsylvania Hospital, in which, however, no fluid was discharged. Dr. Stillé thought that the case must be considered one of Elephantiasis Arabum, and alluded to a report in the *Trans. Path. Soc.* XI., 302, of a case in which there was found between the skin and the proper fascia of the leg, a yellowish fluid which by ten minutes' repose was converted into a clear jelly, and on being boiled passed into a milk-coloured coagulum.

1869. Feb. 3. W. L. WELLS, M.D., presented the following *Report on Epidemics and Meteorology*:—

In 1868 there were reported in Philadelphia at the Board of Health 14,693 deaths, 760 more than in the preceding year, but with that exception less than in any year since 1861. Taking the population at 750,000 this makes one death in 51, or 1.95 per cent. of the total population.

This compares favourably with the mortality in New York, and still

more so with that of European cities, as, for example, in 1865 there was in London 1 death in 41.2; in Paris 1 in 36.3, and in Vienna 1 in 31.4.

The deaths among males amounted to 7674; among females to 7019; and this excess of males, 655 in number, or 9.33 per cent. was (except 150) entirely among persons under 20, as 4153 males died under that age, and only 3652 females.

The number above given as the total includes the stillborn, 744 (36 less than in 1867), and those who died in the country and were buried in the city, 558 in number. On deducting these, we have remaining as the deaths in the city 13,391.

Of those born alive 27.65 per cent. died before attaining the age of 1 year, while not quite 27 per cent. was the proportion in the year 1867. Of those who had attained the age of 1 year, 12.47 per cent. died before attaining the age of 2 years, showing here also a larger mortality by more than 1 per cent. than in the year preceding. At the age of 20, 50.62 per cent. of those born alive would be dead, judging from the rate of mortality in the past year. The risk of death in the following decades would be, judging from the deaths, in

1867.		1868.		
22.00	per cent.	20.08	from 20 to 30 years.	
23.00	"	23.98	" 30 " 40 "	
26.17	"	26.40	" 40 " 50 "	
32.57	"	28.65	" 50 " 60 "	
44.15	"	41.01	" 60 " 70 "	
60.57	"	62.04	" 70 " 80 "	
83.45	"	83.33	" 80 " 90 "	

There are several reasons, however, which must prevent us from drawing conclusions with certainty from the above calculation. One of these is, that Philadelphia is a rapidly increasing community, and of course the deaths among the old in any one year cannot be compared with those among the young, if we wish to show the expectation of life, for the old were born when the population was small, and of course there are not so many of them and therefore not so many deaths as if the population had always been as great.

Another cause of error is the large number of young persons who settle in the city, so that according to the last census there were more inhabitants between the ages of 20 and 30 than between 10 and 20, this excess being chiefly observable in the number of females, of whom there were about 4000 more between 20 and 30 than between 10 and 20.

It is also probable that the number of the very old in cities, compared with that in the country, is diminished, not only by the wear and tear of life being greater in cities, but also by the retirement to the country of many who had attempted in their younger days to make their fortunes in the city. On the other hand, the number of the very old in the census and death reports is increased, both in the city and country, by the fact that among the lower classes many are ignorant of their age, and therefore have a tendency to exaggerate and give it in round numbers, so that probably some are set down at 100 who have not really attained that age. This would account, in part at least, for so large a proportion of the coloured population being registered as over 100.

On comparing the different periods of the year, we find that according to the universal rule in Philadelphia, more deaths occurred in July than in any month in the year, the mortality being 1900, or 12.93 per cent. of the total mortality (the proportion in 1867 was 12.88 per cent.); but

this excess was not caused (as in 1867) entirely by the increased mortality in very young children, but was observed also in those between 40 and 50 years of age, while the mortality among adults generally stood in July only second to that in the month of April.

In those over 60, the mortality was greatest in December and January.

November was (as in 1867) the healthiest month, the mortality being 878, or less than half that in July; and this difference was caused almost exclusively by the difference among the very young, as among children under 1 year of age there were more than four times as many deaths in July as in November (the number being 832 and 206). Between the ages of 1 and 2 years, the mortality in July came second, being 194, while that in August was greatest, or 213. Between the ages of 2 and 20, the influence of hot weather seems to cease to be deleterious, at least almost, as April shows the greatest mortality between those ages, viz., 188; July is second, 181; December third, 179; June fourth, 178; August fifth, 168; while the healthiest month was May, 119; this being between the months which stood first and fourth in the list; and the difference between the two extremes is only 69.

The deaths from zymotic diseases were fewer in number than they have been for several years; thus, from scarlatina only 224 died, while in 1867, 367 died of it; in 1866, 491; and in 1865, 624.

The total mortality from the various low forms of fever, including cerebro-spinal meningitis, typhus and enteric fevers, was only 559, while in 1867, 1866, and 1865, it was 616, 574, and 1321.

Erysipelas shows 51 deaths, also a slight diminution.

The deaths from diphtheria were 119, exactly the same number as in 1867, but less than in previous years. Rubella and croup both show a mortality (108 and 206) slightly greater than in 1867 (83 and 185), but less than in 1866.

But the most remarkable instance of this comparative exemption, was in the case of variola, which only caused one death, while the mortality in the years 1862, &c., was respectively 264, 171, 260, 524, 144, and 48.

Six deaths were reported from cholera; four and perhaps five of them in the district of the city supplied by the impure Delaware water, and which only contains one-seventh of the population: three of these deaths were in July, one in August, and one in April. The deaths from cholera in the years 1865, 1866, and 1867, were respectively 18, 910, and 57.

Pertussis was the only zymotic disease which was decidedly more fatal than previously, as 176 died of it, while in 1865, 1866, and 1867, the mortality was respectively 135, 80, and 65.

Of yellow fever five deaths are reported, but they all died elsewhere, and only appear on the Board of Health reports in consequence of the interments having taken place in the city.

The deaths from malarial fever (53 in number), were pretty generally distributed through the different wards, not more than five occurring in any one ward, and one of these, the 13th, is not only itself closely built up, but is entirely surrounded by closely built up portions of the city.

There were 104 deaths from heat fever, or coup de soleil, 88 males and 16 females, all but 4 being over 20 years of age. Most of them were of the labouring class, as is indicated by the fact that only 20 are marked born in the United States.

Among constitutional diseases tuberculosis was, of course, the most fatal.

The total deaths from phthisis amounted to 1995, 48 more than in 1867, and 51 more than in 1866, but less than in 1864 or 1865. As regards the sex of those who died, we find 1000 males and 995 females, the males being in an excess of 55 in the first half, and the females in an excess of 50 in the second half of the year; this corresponding with 1867, when more males died in each of the first three months of the year, although there was in the whole year a preponderance of 63 females.

The ratio of the deaths from this cause to the total deaths (excluding stillborn) was 14.3 per cent., or 1 in 7, while in 1867 the proportion was 14.8 per cent., or 1 in 6.75. This shows, as compared with the preceding three years, an increase in the relative mortality, as in those years the ratios were 1 in 8.42; 1 in 8.47; and 1 in 8.64.

More deaths from phthisis took place in April than in any other month, the number being 249; next came January, 214; February, 181; December, 171; and March, 170. The fewest deaths occurred in July, viz., 130; and next in October, 135. This is very far, however, from being always the rule; for, in 1866, October, instead of being next to the last on the scale, was next to the first, and April, instead of being first, was ninth.

When, however, we compare the different seasons together, we find that summer followed the usual rule, showing the least mortality.

Most died between the ages of 20 and 30; then between 30 and 40; then between 40 and 50; then between 10 and 20; seven deaths took place over 80, five of them in April.

Besides the deaths ascribed to phthisis, 48 were set down to hemorrhage of the lungs, some of which also were probably caused by tubercles.

Among adults 1721 died of phthisis, one-fourth of the entire number of deaths, 6888.

Of those who died from all causes between the ages of 20 and 30—1383 in number—583, or more than 42 per cent., died of phthisis.

Tubercles in the abdominal cavity (marasmus and tabes mesenterica) caused 588 deaths in 1868, to 565 in 1867.

Scrofula caused 65 deaths to 68 in 1866, and 54 in 1867.

Rheumatism and gout caused respectively 16 and 5 deaths in 1868, numbers not varying essentially from those shown by the tables for the two preceding years.

Diseases of the nervous system caused a mortality slightly greater than in previous years, thus:—

	1866.	1867.	1868.
Meningitis caused . . . . .	371	394	382
Apoplexy . . . . .	188	142	201
Congestion of the brain . . . . .	409	286	368
Softening of the brain . . . . .	50	57	78
Paralysis . . . . .	182	231	248
Epilepsy . . . . .	28	23	32
Tetanus . . . . .	28	23	22
Convulsions . . . . .	697	584	704
Puerperal convulsions . . . . .	27	27	27
Totals . . . . .	1980	1767	2062

More deaths from apoplexy occurred in winter, according to the general rule, but in autumn fewest died.

The total mortality from diseases of the nervous system in 1868, amounted to 15.4 per cent. of the total mortality from all causes.

Diseases of the circulatory system caused, in 1866, 437 deaths; in 1867, 483; and in 1868, 518 deaths, showing here also a slight increase.

The mortality from this cause amounted to 3.87 per cent. of the total mortality.

Diseases of the respiratory system (excluding phthisis) caused, in 1866, 1342 deaths; in 1867, 1082; and in 1868, 1227 deaths, or 9.16 per cent. of the mortality from all causes.

Diseases of the digestive system (leaving out cholera and marasmus) caused, in 1866, 2595 deaths; in 1867, 1936; and in 1868, 2151 deaths, or 16.06 per cent. of the mortality from all causes.

Only 76 deaths were caused by diseases of the genito-urinary system.

The following deaths may be set down as having been caused by congenital defects, viz.:—

Debility, 412 under 1 year (there were in all 600).

Cyanosis and asphyxia, 149.

Inanition, 216 under 5 years (there were in all 255).

Malformation, 24.

The mean temperature of 1868, as compared with that of the past 44 years, was a little low, viz.,  $53\frac{1}{4}^{\circ}$  Fahr., while the mean of 44 years was  $53\frac{1}{2}^{\circ}$ . The warmest year, viz., 1828, had a mean temperature of  $55\frac{1}{4}^{\circ}$ ; and the coldest, viz., 1836,  $49^{\circ}$ .

When we compare the temperature of each month with the mean for 44 years, we find that the cold months were decidedly colder, and the warm months decidedly warmer, than the average; thus February, the mean of which for 44 years was  $33^{\circ}$  Fahr., had a mean of only  $26.65^{\circ}$  in 1868, while January, March, April, May, October, and December, were also all colder than is usual; but on the other hand, June, July, August, September, and November, were warmer than the average.

The whole amount of rain which fell in 1868 was 51.33 inches, while the average annual fall of rain for the last 31 years is 45.71 inches. The month in which most rain fell was September, 8.91 inches; next May, 7.00 inches. The smallest amount was in October, 1.73 inches, and next in August, 2.06 inches.<sup>1</sup>

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ART. XVIII.—*Summary of the Proceedings of the Pathological Society of Philadelphia.*

1868. Sept. 10. *Larynx of a Tubercular Subject, extensively ulcerated.*  
—Dr. James Tyson presented, for Dr. WM. CORSON, of Norristown, the specimen, the epiglottis in which had been completely removed by ulceration, while there was also extensive ulceration of the follicular kind occupying the posterior of the fauces and the interior of the larynx as far as the vocal cords, affecting, however, the true vocal cord of the left side only. The most interesting feature in connection with the case was total absence of alteration of voice up to the time of death, which occurred August 30. The patient, C. H., a bricklayer, aged 49 at time of death, had been an industrious, hard-working man throughout life. Though

<sup>1</sup> Several tables prepared to accompany this report are unavoidably omitted.

possessed of a tubercular history, he enjoyed moderately good health until January 1, 1868, but continued at his occupation until May 7, 1868. His symptoms were almost entirely referred to the fauces, producing painful deglutition, which for some time previous to the 13th of August, when he was visited in consultation by the writer, was most extreme, and continued thus until death, so that it became almost impossible to nourish him in the usual manner. Emaciation and exhaustion progressed steadily and rapidly, and the patient died of inanition, August 30, 1868.

Repeated laryngoscopic examinations by Dr. E. M. Corson revealed the following appearances: Intense redness of fauces; epiglottis and rima glottidis extensively ulcerated, and covered with a whitish slough; the follicular glands at the base of the tongue also enlarged and ulcerated.

The symptoms pointing to thoracic disease were either not marked, or were masked by those referred to the fauces; but physical exploration revealed tubercular deposit at the apex of the left lung. The larynx was removed by Dr. E. M. Corson, but an examination of the lungs was not permitted. As is generally the case in tubercular laryngitis, no tubercle was present at the seat of ulceration, as was shown by microscopical examination, the ulceration being mainly follicular. Though it is uncommon for even the slightest inflammation in any of the cartilages of the larynx to be unattended by change of voice, yet the case is by no means a unique one. In a mere history of a pathological specimen it is out of place to report similar cases, yet we may refer to two cases of Prof. Hermann Beigel, quoted in the *Boston Medical and Surgical Journal* of August 13, 1868, in which the epiglottis was completely removed, not only without symptoms of phonation, but even without pain.

*Nov. 12. Tubercular Disease of Lungs; Extreme Aortic Disease, with Peculiar Murmur; Tænia Solium.*—Dr. WM. PEPPER reported the following case:—

T. J., æt. 29, admitted to the Philadelphia Hospital March 3, 1868. English by birth. Had suffered several years with tænia solium, from which he was temporarily relieved by kousso. On admission, he was passing links; and after the administration of ʒj of pumpkin-seeds, the entire worm was discharged. Signs of pulmonary tuberculosis began one year before admission.

There were the physical signs of consolidation with excavation of the upper lobe of the left lung; the heart's action was very rapid and easily excited, running up to 130; there was a distinct purring sensation on palpation; the heart-sounds were heard throughout both sides of the thorax, and, in addition, there was a moderately harsh systolic murmur heard at the pulmonary cartilage and for two inches along the left second rib. There was also a murmur, seemingly partly presystolic, heard to left of sternum, out to left nipple. There was no abnormal cardiac murmur audible at the aortic cartilage, angle of left scapula, or in left axilla.

These physical signs persisted until death, excepting that the signs of consolidation of the lower lobe, and increasing excavation of the upper lobe of the left lung were developed. Oedema of the legs appeared about six weeks before death, and during the last three months he suffered with colliquative diarrhœa.

*Autopsy.*—Right lung large, very emphysematous, studded with recent miliary tubercles.

Left lung has a huge cavity, involving the anterior part of the whole



upper lobe, rest of the lobe a network of vessels and bronchial tubes surrounded by fibrous tissue and dense tuberculous lung-tissue. Left pulmonary artery and its first branches imbedded in dense fibrous tissue. The lower lobe was consolidated by cheesy tubercle.

*Heart.*—Pericardium healthy. Heart itself not much enlarged. Mitral and tricuspid valves healthy. Aortic valves rigid, with nodules of calcareous deposit; the valvulets were blended with each other, and partially separated from their attachments, so as to form in reality little more than one valve, like a perforated diaphragm. They did not, however, allow much regurgitation.

The cause of this aortic disease is very obscure. There was no history of rheumatic attacks, no cause of obstruction to passage of blood through the aorta existed, and he had not complained of any symptoms of circulatory embarrassment. The sounds to which it gave rise were undoubtedly very much modified by the condition of the lungs. The great enlargement and marked emphysema of the anterior border of the right lung probably concealed the murmur at the aortic interspace; while, on the other hand, the large cavity in the left lung, which was in immediate contact with the aorta, must have aided in developing and transmitting the murmur towards the left. It is quite possible, also, that the compression of the pulmonary artery by the dense tissue surrounding it created a murmur. It appears, therefore, that it would have been almost impossible to foretell the existence of aortic disease.

The atrophic tendency of the tuberculous disease is seen in the size of the heart, which would certainly have been much larger, had the patient been in vigorous health. And yet so complete was the absence of symptoms, and of any appearance of recent diseased action, that the lesion of the aortic valves must have been of very long standing, and have had in reality but little effect in interfering with the circulation. The only dropsy ever noticed in the case was œdema of legs, which merely appeared somewhat earlier and to a rather greater degree than in most cases of phthisis.

*Intestine.*—No traces of the tapeworm were found. The solitary glands of the ileum were in places ulcerated. The mucous membrane of the colon, from the ileo-cæcal valve to the descending portion, was almost entirely destroyed by tubercular ulceration.

*Nov. 26. Rupture of Gall-Bladder; Gall-Stones.*—Dr. W. M. PEPPER presented the specimen, with the following remarks:—

Moses B., æt. 64, admitted to the Pennsylvania Hospital September 29, 1868. He had been struck by a locomotive while standing on the track, and was thrown to some distance off it. He was unable to answer questions, and died the following morning. The left tibia was found to have been fractured; there were contusions on the left side, with fracture of the lower four left ribs, and the left pleural cavity contained blood. On opening the abdomen, clots of blood were found on the right side, directly under the liver; there was, however, no laceration or rupture of this organ. The gall-bladder was of about normal size, and presented a linear rupture on its under surface, extending an inch and a half from the fundus; there was an angular calculus impacted near the opening of the cystic duct, but the ducts were all found to be pervious. The peritoneal cavity contained some bile mixed with blood, and, in addition, three calculi, two large and one very small, which had escaped from the gall-bladder. The combined size of these four calculi was such that they must have

nearly filled the gall-bladder. There was no evidence of ulceration of the mucous lining of this viscus.

*Dec. 24. Tumor of Tibia; Amputation; Secondary Hemorrhage; Death from Exhaustion and Pyæmia.*—Dr. W. M. PEPPER presented the specimen, with the following history :—

M. McC., æt. 45, admitted to the Pennsylvania Hospital April 7, 1866. She was suffering from cancerous disease of the lower end of the right tibia and fibula, which had existed for twenty-five months. The leg had become very much enlarged at this point, but the central part of the growth had softened and discharged, forming a large cup-shaped depression, at least two inches and a half in diameter, with a thick, rounded, projecting lip. This depression opened on the antero-internal face of the ankle, and extended directly into the substance of the tibia; its surface was covered with flabby granulations. Over the external malleolus was a large, soft, almost fluctuating, nodule; on pressing which a sense of crepitation was developed. There were also several large nodules near this one. The skin over the diseased part was blended with the morbid growth, and purplish; the veins were enlarged up to the knee. The inguinal glands were enlarged and hard. She had some cough, with slight mucous expectoration; but no internal cancer could be positively detected. She was extremely anæmic, having lost much blood from the open surface of the growth. Amputation was performed through the knee-joint by Dr. Agnew, April 13, 1866. She did quite well, with some sloughing of skin flap, for two weeks, but then had a severe secondary hemorrhage, which was controlled by an æcupressure pin applied to the popliteal artery. After this she sank steadily, with many of the symptoms of pyæmia, and died May 11, 1866, twenty-eight days after operation. No autopsy was allowed. The disease extended several inches up the shafts of the bone, which were filled with a colloid-looking substance. On macerating the specimen and removing the soft parts, the lower end of the tibia was found almost entirely destroyed, the compact layer being expanded into a very thin lamina, the curve of which was almost spherical, but which was deficient in many places, forming in places a coarsely reticulated bony layer, in others a series of long, delicate spicules.

*Microscopic examination* of the morbid growth within shaft of the bone, or from the outlying nodules, showed oval or rounded cells, with large nucleolated nuclei; a few caudate cells, and quite numerous large cell-like masses, of oval or irregular outline, containing from eight to twenty small, clear, oval nuclei, with small, dark central nucleoli.

1869. Jan. 1. *Report of Committee on a Tumour removed from Side.* Presented by Dr. HUNTER.

The tumour was of an oval shape, about eight inches in its long diameter. It was developed in connection with the fractured extremities of the ribs, and, in growing, had carried before it the intercostal muscles, inducing their atrophy: externally it was surrounded by a thin fibrous capsule. Its external surface was somewhat nodulated; the skin was adherent to the subjacent tissue, but was not ulcerated. On cutting into the mass, the greater part of it was found of a soft, almost brain-like, consistence, readily breaking down under pressure; it was of a yellowish-white colour, and imparted an unctuous feeling when rubbed between the fingers. The central parts of the mass, lying nearest to the ribs, presented the greatest degree of this softening and degeneration. On the contrary, some of the outlying nodules still retained the typical appearances of

encephaloid cancer, presenting a grayish-white ground dotted with vascular patches, and exuding, on scraping, pure white cancer-juice. The ends of the ribs were found imbedded in the morbid growth, completely denuded of periosteum, and presenting a rough, spiculated surface. The growth had also advanced internally into the thorax, presenting a flat oval tumour projecting above the level of the costal pleura. The corresponding part of the pulmonary pleura was partially adherent, and was the seat of cancerous deposit half an inch in thickness. There were no distinct masses of cancer in the lungs, and the growth had encroached but little upon the pulmonary tissue.

*Microscopic examination* of the nodules which had not yet undergone degeneration showed the typical appearances of encephaloid cancer; numerous large cells of varied shapes, mostly fusiform, with one, two, or three large nucleolated nuclei. The central portions, as well as the portion involving the pleura, presented an extreme degree of fatty degeneration. In addition to a very large amount of free oil in granules and drops, and numerous crystals of cholesterin, there were many fully-formed granule-cells, and most of the other cells present contained many oil-granules and small drops, in some cases obscuring the nucleus entirely.

The history of the case, as well as the post-mortem examination of the tumour, shows that it found its starting-point in connection with the ribs which had been fractured eight years before.

WILLIAM PEPPER,  
CHARLES T. HUNTER.

*Jan. 14. Melanotic Cancer of Liver.*—Dr. WILLIAM PEPPER, in presenting the specimen, read the following history of the case from which it was obtained:—

H. B., æt. 48, was admitted to the Philadelphia Hospital in 1865. In 1860 he received an injury of right eye from a piece of stone. The eye continued inflamed for two years, by which time he was totally blind. In the spring of 1865 a small tumour appeared protruding from the eyeball, which was removed by Dr. W. Pancoast. In the fall of 1867 the tumour reappeared, and was again removed by Dr. Maury, and on microscopic examination by Dr. Tyson, was found to present characters of melanotic cancer. Between August 1, 1868, and October 1, 1868, the tumour reappeared, and was extirpated three times by Dr. Lodge. After the last operation, gnawing, dragging pain in the right hypochondrium appeared, and death occurred November 30, 1868. There was neither jaundice nor œdema.

*Autopsy.*—The cancerous growth extended back in the orbit to the optic foramen, but did not involve brain. The orbital plate of the frontal bone was absorbed by its pressure. The chain of cervical glands on right side were enlarged, and so were the post-sternal glands. The liver was enormously enlarged, weighing 11 lbs. 12 oz.; the transverse diameter of whole organ  $14\frac{1}{2}$  inches; the antero-posterior of the right lobe 11 inches; thickness of right lobe  $4\frac{1}{2}$  inches. The surface presented numerous small, flat nodules, but no large projecting masses. The peritoneum was in places thickened, opaque, puckered; but there were scarcely any abnormal adhesions. The colour of the external surface varied much, some of the nodules being pinkish, gray, or flesh-coloured; but many others were intensely black, looking almost like ecchymoses of the subperitoneal tissue. On section the mass of disease was found to occupy the upper stratum of the organ, the lower part being the seat merely of a few small nodules. The hepatic tissue was yellowish and fatty. The nodules in the substance of the organ presented the same varieties—some very black, of firm encephaloid consistence, yielding on pressure a black fluid like China ink; and others of a light pinkish colour. The entire upper part of the right lobe was

converted into an encephaloid mass of variegated colour, presenting patches of light flesh colour, interspersed with others of a pure black.

The *microscopic examination* by Dr. Tyson showed a large amount of black pigment, both free, in the form of irregular masses, and inclosed in cells; reddish hematin flakes, large and small cells of irregular size and shape, containing in most instances but a single nucleus, and often shrivelled looking, or containing fat granules; free nuclei and free oil granules and drops. There was no cancer in any other organ.

The points of most interest connected with the case seem to be, the apparent existence of a local exciting cause; the injury to the right eye, five years before the development of the tumour in the orbit; the repeated recurrence of the growth *in situ* after apparently complete extirpation; the enlargement of the cervical and post-sternal lymphatics; the limitation of the secondary disease to the liver, and especially to the right lobe; the characters of the pigment, and its presence not only in the form of free masses, but of granules inclosed in cells, and taking the place of the ordinary cell contents.

*Jan. 28. Compound Placenta of Twins.*—Dr. E. A. SPOONER presented the specimen, with the following history:—

The mother suffered a fall some four weeks before the termination of gestation. Labour supervening at term, a child was found presenting by the right shoulder, which was delivered by podalic version, alive, and weighing eight pounds. A second child subsequently presented also by the right shoulder, which was delivered, like the first, by podalic version, which when delivered weighed nearly eight pounds, and had the appearance of a fœtus some three or four weeks dead, the cuticle peeling readily. The cord of the dead fœtus was black, but had not undergone disintegration in its near proximity to the fœtus; hence it was ligated and divided. The placenta presented the following appearance: the point and area of attachment of the healthy cord appeared perfectly natural, but in the immediate neighbourhood of the attachment of the injured cord, extending some three inches in diameter, the spongy structure of the placenta had suffered disintegration, whilst the large branches of the bloodvessels continued intact. The cord itself appeared crushed and torn, and at about two inches from its placental attachment was completely divided. The point of extreme injury, at the time of the accident, would then seem to have been the one just described—say about two inches from the placental attachment—and this was probably the seat of injury, which resulted in the death of the child. It should be observed that the placental line of demarcation between the two sacs was not noticeable, and that there was no bag of waters preceding the presenting portion of the second child. There was no undue sanguineous discharge, nor was the amniotic liquor which accompanied the delivery of the first child unusually dark coloured.

From all the circumstances of the case, the conclusion would seem to be justified that the death of the second fœtus resulted from the injury sustained by the cord in its near proximity to the placenta; that injury probably not rupturing immediately the umbilical vein or artery, but so impeding the circulation as to deprive the child of the nourishment essential to its vitality. If such an inference is warranted, the case is not devoid of interest, adding, as it does, to the list of injuries which may destroy fœtal life.

Dr. SHERWOOD was reminded by this case of one in his own practice, which was quite similar. He was called, on the 21st of November last, to attend a healthy young Irish woman, in her first labour, and found a child presenting in the first position of the vertex. The pains were violent, and occurred as often as every half minute. He finally extracted the child, with the assistance of his hand only, and noted that the size of the abdominal tumour had decreased but little. On examination he found a second child, which was soon delivered, but had evidently been dead about four weeks. The bones of the cranium were loose, and there were other evidences of putrefaction. In this case, also, the cord of the dead child appeared twisted, as though ligated; and the patient about four weeks previous to date of confinement, had met with a fall. The doctor had attributed the death, at that time, either to rupture of the vessels of the cord, or its being twisted in some way perhaps around the limb of the child, as in a case reported to the College of Physicians by Dr. A. Nebinger.

*Aneurism of Left Middle Cerebral Artery; Partial Right Hemiplegia; Aphasia; Eccentric Hypertrophy of Heart with Valvular Disease; Embolism of Spleen; Rupture of the Intracranial Aneurism, and Death in Thirty-six Hours.* Dr. WILLIAM PEPPER, in presenting the specimen, read the following history of the case:—

C. R., æt. 28, from New York, admitted to Philadelphia Hospital August 5th, 1868. No history could be obtained. On admission, partial right hemiplegia; expression vacant, hearing apparently good; voice not lost, but unable to utter any articulate sounds. Heart's action excited; apex beat at sixth rib to left of nipple; increased area of percussion dulness; double blowing sound heard at apex, aortic cartilage and epigastrium; systolic murmur heard also in left axilla, at angle of left scapula, in vertebral gutter, and transmitted far into arterial system. Pulse 100, tense, bounding and jerking; visible pulsation of the smaller arteries. Ordered tinc. veratri viride gtt. vj; q. t. h.; potass. iodidi gr. xv, q. q. d. The partial paralysis of right side of face and of right arm disappeared; he still seemed giddy and walked unsteadily. Pupils equal; sight and hearing good, and he usually seemed to understand what was said to him, though not always, for when told to stretch out his hand he would protrude his tongue. He answered "yes" and "no" clearly, and usually correctly, though he sometimes seemed to employ them indifferently. So soon, however, as he tried to frame a sentence, he could utter only strings of jargon, which did not sound like any known language. He used oaths correctly at times; he was unable to give either his name, age, or occupation. He appeared to have been able to write with either hand, but when a pencil was given him, he wrote a series of letters and lines without meaning. If a book were given to him, he would appear to read fluently unintelligible jargon.

The treatment was persisted in, and patient steadily though slowly improved. The pulse became more quiet and less frequent, though still corded and jerking. The cardiac murmurs remained the same, and were diagnosed as coming from hypertrophy, with insufficiency and roughening of both the mitral and aortic valves. The general symptoms improved more rapidly than the cerebral, so that all traces of paralysis had disappeared, and he was able to be out of bed and walk about, while yet his expression was to a certain extent unnatural, and he had not regained the

power of coherent speech. This also improved, however, though a positive degree of aphasia persisted. He became able to write his name, though the last two or three letters were replaced by others; he could repeat the numerals and most of the alphabet, but could not frame intelligible sentences. He became conscious of this loss of words, and would show marked irritation, and could make us understand that he was perfectly conscious of what he wished to say, but was unable to recall the fitting words.

He remained thus, steadily improving, for about three weeks, when, without any appreciable cause, he grew suddenly much worse, his respiration became hurried and gasping, the pulse small and very frequent. The heart's action was confused, and all the murmurs much less distinct. Lungs were full of fine moist râles; the surface of body cool, and bathed in sweat. There was no delirium, but hebetude and extreme restlessness. The chosen decubitus was right lateral. There was no apparent paralysis. Œdema of feet appeared and spread very rapidly over the lower limbs, extending up to the line of the umbilicus, being very marked over all this space. He remained in this condition for thirty-six hours, becoming comatose, and then died.

*Autopsy.—Brain:* On removing the calvaria, congestion of the large meningeal vessels was seen. The exterior of the brain was apparently healthy, and there was no depression of any of the convolutions. The arteries at the base were healthy, with the exception of a few minute points of atheroma.

The right side of the brain was healthy throughout. On cutting into the substance of the left hemisphere, a clot was found running along the outer border of the corpus striatum through its entire extent, and extending somewhat in advance of its anterior extremity. The anterior lobe was thus involved, quite up to a point corresponding to the third frontal convolution. The optic thalamus was quite healthy. The inner part of the corpus striatum was firm and healthy, and the lateral ventricle contained but a small amount of clear serum. The effused clot was dark, soft, and mingled with broken-down brain substance. At some points the surrounding brain tissue was stained of the peculiar yellow colour habitually found in cases of old cerebral hemorrhage, as though there had been previous extravasation of blood. It is not probable that this resulted from the extensive hemorrhage which occurred thirty-six hours before death. The hemorrhage could be traced to a rupture in the walls of an aneurism of the left middle cerebral artery, about half an inch in diameter, which lay just in advance of the corpus striatum. The first part of the artery was quite healthy, and it then suddenly expanded into the spherical sac, into which it opened by a minute orifice. The aneurism involved all the coats of the artery; its walls were thin, and presented a rupture of the posterior surface. The sac was almost filled with soft and firm dark clots. There were no evidences of embolism in the brain, and no miliary aneurisms were detected.

The lungs were deeply congested and œdematous. The heart presented extreme eccentric hypertrophy, principally affecting the left cavities, and extensive disease of the aortic and mitral valves, consisting of vegetations with calcareous incrustations; these valves were also markedly insufficient. The liver was enlarged, and in a state of nutmeg congestion. The spleen was much enlarged, and presented several embolic patches.

The kidneys were much congested, hard, and coarse-grained; they presented no traces of embolism.

Dr. ASHHURST was struck with a fact in one of the cases reported by Dr. Hughlings Jackson, which illustrates admirably the retention of the reasoning power while speech was lost. The patient in this instance had been in the habit of sending to an apothecary named Wall, and when he desired anything from this person's shop he indicated it by tapping upon the *wall* at the side of his bed.

Dr. SHERWOOD related a case of aphasia which came under his notice a year and a half ago in a gentleman, aged forty, who, while talking with a friend suddenly lost the power of articulate speech. When Dr. S. arrived, the patient was sitting up on a settee, and made attempts to answer questions put to him, but could only express a syllable here and there; he would transpose syllables, putting the latter syllables at the first part of the word. There was dilatation of the pupils. Eight cups were applied to the back of the neck, resulting in complete relief.

Dr. MITCHELL remarked that this power to make use of oaths in patients with aphasia is not uncommon, and the present case confirms the statement of Dr. Hughlings Jackson, who says that words indicating strong emotional influences are much better retained than others.

In other cases of aphasia seen by him, the retention of the power to use habitual expressions indicative of amazement, and the like, after the loss of other speech, had been noted several times. In one instance, a French gentleman lost the familiar habit of using oaths in English, but was able to swear roundly in his native tongue. During recovery, the first English words which he could say were, "Oh, damn—my damn."

Dr. WILLIAM PEPPER remarked that there were several points of peculiar interest in connection with this case: 1st. The seat of the aneurism is that most frequent in such cases, the middle cerebral artery. Thus, in the 85 cases tabulated by Dr. Hutchinson, in his paper on "intracranial aneurism," in the recent volume of the *Pennsylvania Hospital Reports* (vol. ii., 1869), the middle cerebral artery was the seat of disease in 26 cases.

The basilar artery was the seat of aneurism . . . . .	25 times
" middle cerebral " " . . . . .	26 "
" anterior communicating " " . . . . .	5 "
" " cerebral " " . . . . .	9 "
" internal carotid " " . . . . .	10 "
" superior cerebellar " " . . . . .	1 "
" posterior cerebral " " . . . . .	2 "
" posterior communicating " " . . . . .	2 "
" middle meningeal " " . . . . .	1 "
" vertebral " " . . . . .	4 "
Total . . . . .	85

In age, nine patients were under 20, seven between 20 and 30, and the largest number, ten, between 50 and 60.

In regard to the mode of termination: it is that, also, which most frequently occurs, rupture taking place in by far the greater proportion of cases, the thinness of the sac rendering such a termination most probable.

There are also three points of especial clinical interest: 1st. The question of diagnosis at the time of his admission. 2d. The question of the diagnosis of the accident which preceded death by a few hours. 3d. The relations of the aphasia, and the paralysis affecting the muscles of

the face and of the thoracic and abdominal extremity of the right side. The paralysis was slight, and the patient presented a confused and unnatural expression, and had aphasia. Attention was directed to the heart, and from the marked cardiac lesions it was thought probable that there had been embolism of one of the cerebral arteries of the left side. At that time, also, enlargement of the spleen was recognized, and it was suspected that this organ was likewise involved. There were no symptoms which could call attention to this aneurism, and in looking over cases where it has existed free from the complication of cardiac disease, scarcely one case in fifty has been diagnosticated, and indeed in only one instance on record was the aneurism actually foretold, the diagnosis coming no nearer in most cases than that of a tumour of the brain.

If there were marked lesion of the vascular system, especially with a tendency to aneurism in other arteries, the existence of the intracranial aneurism might be surmised by the symptoms of cerebral tumour associated with such tendency. But I do not know of any case in which this peculiar combination of symptoms existed. In this case, the very strong cardiac symptoms, and utter absence of history as to whether the cerebral symptoms had come on suddenly, as though from detachment of a fragment of a vegetation from one of the valves of the heart, lead me astray from the correct diagnosis, and the patient was thought to be suffering from embolism of the arteries of the left hemisphere. From the symptoms portrayed as present at the close of the case, I presumed that thrombosis of some of the large venous trunks had occurred, and I am quite at a loss to explain the sudden œdema of the lower extremities. It resembled much the symptoms apt to follow obstruction of the ascending vena cava, and it appeared as though some portion of fibrin might have obstructed the entrance of this vessel. But at the autopsy there was no such thrombosis found, and we must seek for the cause of this in some other manner.

In regard to the aphasia, he had many of the unquestionable symptoms of this disease. He was unable to speak articulately, but was able to understand what was said to him; he was able to articulate words habitual with him, as "yes" and "no," and certain oaths; to write certain words habitual to him, as his name; but even here he often replaced the last few letters of his name by letters which did not belong there. I did not try whether he was able to copy writing. In all these very striking points he presented the symptoms of aphasia.

The case cannot be made use of as bearing on Broca's statement, that the posterior part of the third left frontal convolution is the seat of the faculty of language. The lesion here was so very extensive, and the destruction of the brain substance was so complete, that it was impossible to say how much of this existed before the final rupture of the sac. But the ochre-coloured staining along the line of the corpus striatum, led to the belief that there must have been a previous hemorrhage to at least a slight extent, resulting probably from a partial rupture of the aneurismal sac. As, however, the lesion was limited to the anterior half of the left hemisphere, and to the motor portion of this side, the cineritious substance being quite healthy, it may be regarded as a case confirming the localization of *voluntary* speech in the left hemisphere. The preservation of consciousness, intelligence, and volition, shows also that the lesion in aphasia is not of the intellectual portions of the brain, but of the central motor nucleus through which the mental concepts must be transmitted to be formed into words. In accordance with this, we find in this case the lesion limited to the motor tract of the left hemisphere.



ART. XIX.—*Proceedings of the Clinico-Pathological Society of Washington, D. C.*

1867. Dec. 21. *Extra-uterine Fecundation*.—The following case, accompanied by the specimen, was reported by Dr. WM. LEE:—

Mary A., mulatto, aged 28 years, married, large form, fine physique, and apparently with a healthy constitution, never having had any serious sickness since the age of puberty. Has one child eleven years of age, the result of her first pregnancy. Her first husband dying, she married again in 1861, became pregnant and had a miscarriage in 1864, and another in 1865, both occurring at about the third month. About Oct. 15, 1867, she missed her regular menstrual flow and supposed herself to be again pregnant. Soon after, Nov. 1st, she complained of a constant pain in the right iliac region, which became somewhat tender on pressure, with an inability to lie on that side, while the left iliac region, as she advanced in pregnancy, began slightly to enlarge—giving rise to surmises on the part of her old women friends as to the probable sex of the inclosed contents—they deciding that girls always lay to the left.

December 7. Patient engaged this morning in removing the furniture of her house to one some eighteen blocks distant, and rode most of the way on a furniture wagon. The pain in her right side seemed to increase in severity on this day until about 3 o'clock P. M., when she complained that the pain had ceased, but that she felt worse than before, being affected with sickness at her stomach, and having an uncomfortable, indescribable, feeling of distress. She was taken home in a hack, and at 6 P. M. I saw her for the first time. Found her extremities and body very cold, notwithstanding the amount of covering on the bed; no pulse at the wrist, heart beat distinct, slow and regular; lips pale, mind clear, but an indisposition to talk; no pain, but complaining of a constant nausea and faintness; a somewhat distressed countenance, with a constant tossing to and fro in the bed. Ordered perfect rest, warmth to the extremities, stimulants in the shape of hot whiskey, and a dose of pulv. Doveri. The remedies proved of no avail, however, as at 7 P. M. she died, retaining a clear mind to the last.

Thirty-eight hours after death made an examination of the body, assisted by Drs. F. A. Ashford and L. J. Draper. Rigor mortis well-marked. An incision through the abdominal walls showed about an inch and a half of adipose tissue; abdomen and pelvic cavity filled with blood and clots, which nearly half filled a wooden water bucket, capable by measurement of holding two and a half gallons. In one of these clots was found an embryo apparently of about ten weeks growth with the membranes and a part of the chorion attached. The uterus was enlarged, with thickened walls, and presented on its fundus, both anterior and posterior surfaces, a few small vesicular cysts. It measured in breadth, at the fundus, from the insertion of the Fallopian tube on one side, to a corresponding point on the other, three inches; and in length, from a central point on the fundus to the os externum, four and a half inches. The length of the cervix from the os internum to the os externum measured one and a half inches. The uterine walls were intact, no lesion being appreciable in their tissue. On making a longitudinal incision into the uterus, the walls were found to be thickened to the extent of three-quarters of an inch, with large open sinuses interspersed throughout their

tissue; the cervix and os externum contained a mucous plug; the right Fallopian tube seemed to be impervious—the left had a minute opening into it. Within the walls of the uterus was a thickened, rugged, apparently very vascular decidua, covering the entire internal aspect of the uterus down to the os internum; the anterior deciduous coat was readily peeled off, leaving beneath it the smooth denuded wall of the uterus; that of the posterior wall was left *in situ*. The left ovary was not examined carefully, but seemed to present nothing unusual; Fallopian tube normal; in the right ovary there was no sign of a corpus luteum, but it contained a large cyst at least half an inch in diameter inclosing serum. The right Fallopian tube at a point about midway between the uterus and ovary, or, perhaps rather nearer the uterus, was enlarged to the diameter of two inches—having a rupture on its surface one and a quarter inches in its long diameter, and contained clotted blood with what appears to be a portion of the chorion. We did not seek further for the bleeding vessel, as it was undoubtedly situated within the tubal tumour, and to disturb its contents would tend to injure the value of the specimen.

The cause of death having been found, no further examination of the body was deemed necessary.

1868. Jan. 9. *Hemiplegia following the inhalation of Nitrous Oxide; subsequent Typhoid Fever.*—Dr. F. A. ASHFORD, Assistant Surgeon Columbia Hospital for Women, reported the following case:—

Lizzie J., æt. 16 years, was admitted to Hospital September 16, suffering from hemiplegia of left side. Born in Italy; had been in this country but a year or two. Had never menstruated; was well developed; of a lively temperament, and had always enjoyed good health until two weeks before admission, when, having suffered for several days with backache, flushes, and intense odontalgia of four upper incisor teeth, she, believing her trouble arose from them, visited a dentist, and while under the influence of nitrous oxide gas, had them extracted. Said, when first aroused, they told her she had been insensible for two hours. Her head ached very severely, and she started home, but grew faint and dizzy, and remembers little that occurred until next morning, when she found her left arm useless. Pain in the head continued; was at times delirious, so as to require being tied in bed. A week afterwards visited a woman who gave her ten "electric baths;" but they made her worse, and increased the pain in her head. Her lower left extremity soon became affected. When she entered hospital she seemed somewhat anæmic; pulse rather weak, but good; temperature 98° by axillary thermometer; respirations 20. The left facial muscles considerably involved, and, when eating, the food got outside her teeth, so that mastication could not be accomplished except by removing it to the right side. This difficulty arose principally from paralysis of buccinator. Laughed only on one side; her tongue, when protruded, inclined to the left, and at times articulation was difficult. The left side of her head, as she expressed it, felt twice as large as the right; headache frequent. There was loss of sensation, as well as the power of motion in her left upper and lower extremity. No trouble with bladder; bowels sluggish; had not been moved for eight days. Could walk by dragging her foot along and holding to some support.

The treatment adopted was essentially tonic, with a generous diet, and

a pill morning and night, containing  $\frac{1}{3}$  gr. of extract of *nux vomica*, which relieved constipation.

Oct. 1. Could walk up and down stairs with the aid of the baluster, and could carry her hand to her head by a series of jerks, but could grasp nothing with the least degree of force. Sensibility returned, inasmuch that she became sensible of pain when the affected parts were pinched, but could not distinguish whether one or two points of a pair of compasses touched her, when separated one-fourth of an inch. Her urine was examined by Dr. Southworth; colour and odour normal; sp. gr. 1020; acid; deposit slight, gelatinous, consisting of a few crystals of oxalate of lime and pus-corpuscles.

Dr. J. H. Thompson, surgeon in charge, noticing a similarity of some of her movements to chorea, suggested the use of bromide of potassium in 3ss doses *ter die*, and spine to be painted with ethereal tr. of iodine. The bromide was continued for ten days, but with doubtful efficacy. (I would here state, that no cerebral symptoms, as noticed by Dr. Hammond, were manifested.)

Oct. 27 Suffering extremely with headache; has been feeling badly for several days, with pains in her back, and anorexia. In the evening, epistaxis was profuse, and continued, at intervals, for several days, entirely relieving her headache. On the 29th, temperature was  $101.8^{\circ}$ ; pulse 101; respirations 24. On examination of a chart which I have had made, showing the range of temperature, pulse, and respiration up to the thirty-eighth day of fever, I find that, on the sixth day, the temperature was  $104.3^{\circ}$ , or ranged between this and  $103^{\circ}$  until the tenth day, on the morning of which it was  $100^{\circ}$ , and in the evening  $102^{\circ}$ . The evening exacerbations now became well marked, the temperature on the twenty-first day sinking to  $98.6^{\circ}$ . Diarrhoea was present on the fifth day, and the rose-coloured eruption on the 11th. Her urine, examined frequently, showed nothing very abnormal until the twelfth day, when pus and fatty granular casts appeared; nineteenth day, pus, granular casts, vesical and vaginal epithelium, and vibriones, composed the slight deposit. By December 3d the urine became normal, and no casts could be found.

Her treatment from commencement of fever consisted of stimulants and nourishment; the former embracing wine and whiskey, the latter in the form of beef-essence; occasionally liq. ammon. acetatis, Dover's powder, and ol. turpentine from twelfth to twentieth day. On thirty-third day relapse took place; temperature rose rapidly to  $103^{\circ}$ , with great prostration; very rapid and weak pulse, and delirium. For several days it remained between  $103^{\circ}$  and  $104^{\circ}$ , but soon after declined. During her relapse, Dr. J. H. Thompson seconded my request to use strychnia and belladonna. She took  $\frac{3}{4}$  gr. strychnia, and  $\frac{1}{2}$  gr. ext. belladonna every six hours until its specific action commenced, which was in forty-eight hours. Afterward took 20 gtt. elix. phos. ferri, quiniæ et strychniæ, *ter die*, and her improvement was rapid in every respect. . . .

Did the *nitrous oxide* produce congestion of the brain and effusion into its ventricles or tissue, or did the hemiplegia result, as was at first supposed, from exhaustion? (The fact of having taken nitrous oxide came to our knowledge some time after her admission.)

This young lady was of that age when she ought to have menstruated. Might not her organism have been at that time undergoing menstrual excitement, as manifested by "pains in her back, flushes, and toothache?"

and may not this have been the predisposing cause of her apoplectic condition produced by the gas? Again, what relation exists between her pathological condition and typhoid fever? At this time, when the theory is pressed that typhoid fever is essentially a nervous fever—that Peyer's patches are but tufts or ganglia of the great sympathetic system, might we not discover some verification of its truth in this case?

*Jun. 8.* Since the above was written this patient has been daily improving, and now walks about with ease. Her face is unaffected, and her extremities are regaining their wonted strength; has no headache, and is anxious to return home. Still takes the phosphates of iron, quinine, and strychnia.

*January 30. Pyæmia following a comparatively trivial Surgical Operation.*—Dr. A. F. A. KING reported the following case: C. N., a black man, æt. 28; labourer; general health good; not habitually intemperate, but occasionally becomes intoxicated, when his appetite for drink is fully indulged. On several occasions he has received cuts and bruises while intoxicated, but they have always readily healed. Dec. 25, while in a state of inebriation, he fell under the wheel of a street car and received the following injury: the tissues of the palmar surface of the little finger were crushed and grazed off down to the phalanges, leaving these bones almost bare, and the second phalanx broken. The neighbouring ring finger was crushed and broken still more, the extreme end of it, together with the nail and unguis phalanx, being cold, discoloured and insensible. The middle finger grazed on its palmar surface but not broken. The axilla between the ring and middle fingers was split up into the hand, on the palmar surface, and deep in between the metacarpal bones, to the distance of one and a quarter inches. In addition to these injuries, there was a severe contusion over the right scapula behind, and on the top of the shoulder over the acromion. Two hours after the accident, there were no symptoms of shock, and the patient being very drunk and unmanageable, the wound was simply cleansed and cold water dressing applied.

On the succeeding day the same treatment was continued.

*Dec. 27.* The ring finger amputated through first phalanx, one-third its length from the metacarpo-phalangeal articulation. Chloroform was inhaled to the amount of  $\frac{3}{4}$ ss before anæsthesia was produced. The tissues of the stump were swollen and infiltrated with serum, at the time of operating.

During the first few days succeeding the operation the hand, fingers, and forearm were kept constantly irrigated with water, more or less cold, to suit the sensibilities of the patient. The free surfaces—all of them—soon began to discharge laudable pus in normal quantity, and were covered with healthy granulations; the bowels becoming costive (owing probably to an occasional opiate given at bedtime), a dose of magnes. sulph. was taken with relief. All heat and redness of the parts having subsided a few days after the amputation, the cold dressings were discontinued, and lint with simple cerate substituted in their stead.

By the 7th of January, the stump had united, except on the side towards the middle finger, where the tissues had been torn by the injury. All other raw surfaces granulating well, a line of new skin creeping over their circumference, and the discharge of pus in every way normal. No fever or pain, tongue clean, appetite and spirits good. The bowels, how-

ever, not having been moved for three or four days,  $\frac{3}{4}$ ss castor oil was ordered.

Dating from the operation of this generally mild and harmless medicine, the whole aspect of the case was changed. On the afternoon of January 7th, and throughout the whole of the succeeding night, he was purged incessantly.

*Jan. 8.* Considerably exhausted, very restless and nervous, no sleep last night; tongue coated with white fur. The wounds are dry and inactive, the discharge of pus from them having almost entirely ceased. Ordered warm poultices to wounds, and mixture containing tr. opii and spts. eth. co., to be given every two hours, until bowels quiet and patient sleeping. Also nutritious liquid diet, and some whiskey.

*9th.* Was attacked last night with severe pain, and there is now exquisite tenderness of the right shoulder, both in the vicinity of the joint, over the scapula, and half way down the arm. Eyes very slightly yellow, tongue heavily coated, breath offensive, but no pyæmic odor (sweetness) discoverable in it; pulse 104; skin dry; urine scanty and high coloured. The bowels were quieted and sleep produced during the first part of the night after taking the anodyne mixture. The wounds still dry, or discharge only a few drops of *reddish looking pus*. With a view of stimulating the secretions, especially of the liver, kidneys, and skin, he was ordered a small dose of blue pill, and a mixture containing spts. eth. nitrosi; fld. extr. taraxacum; and vin. ipecac. The anodyne at night. The painful shoulder was painted with cantharidal collodion, and poultice directed to be applied after the skin had vesicated.

*10th.* Nine A. M.; pulse 120; eyes and skin yellow; tongue dry, coated, and beginning to become brown in centre. Has vomited once only. Though at times feeling unpleasantly cool, he has had no well-defined rigors. Urine of deep amber colour and in tolerable quantity. Bowels open once. Great nervousness with trembling of the lips and fear of being handled. On gently pressing almost any part of the body, he cries out with pain, but bears it without complaint after the first touch is past. This hyperæsthesia was, however, most marked, in the upper extremities. The shoulder is less painful, but still very tender to the touch; no fluctuation, indicating abscess, could be detected in it. Wounds dry or nearly so, somewhat enlarged by sloughing. There is now also pain in the right chest, with an occasional cough, but no expectoration. Dulness, crepitant rale over lower portion of right chest anteriorly. Ordered beef-tea and whiskey in ample quantity, every two hours with anodyne at night.

*11th.* Wounds unchanged. Pulse 120 and feeble; deeply jaundiced. Urine scanty and high colored. Bowels not open. Tongue dry, brown, and thickly coated. Less pain in the shoulder, more in chest. Hardly any cough. Expectoration scanty, very viscid, tenacious, and of a light bluish or leaden colour. Respirations forty-eight per minute. Dulness and bronchial breathing of lower right breast anteriorly. Slight pneumonic symptoms of left breast also. Continues to take beef-tea, egg-nog, and whiskey, though in less quantity, from his unwillingness to swallow them.

*12th.* General symptoms much the same, but with increased debility. He is apathetic and indifferent; though very sensitive to pain on being handled. Respirations forty-eight and short. He is unable to cough, and refuses to take anything from his alleged inability to swallow. A

piut of high-coloured urine drawn off with catheter. He continued to sink, the mind remaining always clear, and died seven and a half P. M., eighteen days from the date of the accident, and five since the day on which he was purged by castor oil, immediately after which his pyæmic symptoms first made their appearance.

*Autopsy eighteen hours after death.*—Rigor mortis well marked. General surface distinctly yellow. The trunk is quite warm, though the body has been in a cold room without fire, and the weather very severe. In the inferior lobe of *left lung* beneath the pleura, so as to be distinctly seen through that membrane were five or six yellow abscesses, about the size of a split pea. Lung tissue generally much congested (except at apex) and in some parts hepatized. Inferior and middle lobes of *right lung* hepatized almost throughout their whole extent. Several small abscesses beneath the pleura, like those on the left. None of these abscesses could be found in the inner texture of the lung, but only on the surface. Heart deeply tinted yellow, but presented no other abnormality. *Pleura* was injected throughout. *Liver*: A mass of its tissue on the superior surface of the right lobe, immediately beneath the diaphragm, and equal in size to the human fist, was found disorganized into shreds; a large abscess having formed and broken at this point. It contained, however, not fluid pus, but a soft semi-solid matter, having a yellowish-brown and somewhat hemp-like appearance.

Another abscess, about the size of a hen's egg, and containing the same yellowish-brown disorganized tissue, was found deeply situated in the central portion of the same lobe. Also several other smaller abscesses. Almost the entire right lobe was of a dark bluish-green colour from congestion. The left lobe was also slightly congested in its inferior part, otherwise healthy. *Lobus quadratus*, and *lobus Spigelii* normal. The gall-bladder was quite full of thick inspissated bile, of a blackish-green colour, and so tenacious that strings of it could be stretched out three feet in a horizontal direction without breaking. *Spleen* slightly congested; and perhaps slightly softer than natural. Size normal. *Kidneys* normal. *Bladder* closely contracted and empty.

On opening the right shoulder-joint, there came out thick sanious pus, having a somewhat fetid odour. The contused parts about the shoulder were of a dark liver colour and infiltrated with serum. The left elbow-joint (in which the patient had also complained of great pain) was opened, but contained no pus.

The revelations of the autopsy were therefore chiefly these: double pneumonia, advanced to hepatic consolidation, with minute abscesses beneath the visceral layer of the pleura. Intense congestion and large abscesses in right lobe of liver. Gall-bladder filled with inspissated bile. Abscess of the right shoulder-joint.

*February 13. Menorrhagia and Cervical Leucorrhœa.*—The following cases were reported by Dr. WILLIAM LEE, to illustrate the benefit of the sponge tent in such affections:—

CASE I. M. J. C., æt. 20, mulatto, native of United States, unmarried, with one child. Has never been subject to disease, and is of robust habit.

*Jan. 30, 1868*, found her suffering from an excessive menstrual flow; six weeks before had her regular menstrual period, at the end of four days being checked for a week's time, then recurring and continuing without intermission to date, the soiling at least a half dozen napkins

per day with fluid blood, passing no clots. She can assign no cause; menses always regular previously; appetite somewhat impaired; looks anæmic and feels very weak, with a constant pain in the small of the back; bowels regular.

Made a vaginal examination, finding the os congested, low down, and to the right; fundus uteri in the left iliac fossa situated anteriorly, and but little enlarged; no abrasions on os; no leucorrhœa; cervix filled with a reddish fluid oozing out of os. Introduced a sponge tent dipped in glycerine, and retained in place by a wad of cotton batting saturated with the same.

31st. Patient has had a profuse pinkish discharge, with slight pain in the left iliac fossa of a bearing-down character. Removed the wad and sponge tent, which was fully dilated, neither of them giving any odour; os dilated sufficiently to introduce index finger into uterus, but could discover no morbid growths; position of os and fundus somewhat more normal; still a slight reddish ooze from the os. Again introduced a tent, as before, and of a somewhat larger diameter.

Feb. 1. Patient feels much improved; watery discharge occurred as before, but has lost its pinkish colour; slept well; no pain to speak of, but a sense of fullness in the neighbourhood of the uterus. Removed tent; no odour; no sign of existing hemorrhage; os and fundus apparently in the axis of the pelvis. Ordered perfect rest and attention to diet.

11th. Patient visited me at my office, and has had no return of discharge or pain, and is feeling quite well.

In this case I wished to test the benefit of the sponge tent alone, and so used no other treatment, with the exception of the glycerine, which however is, I think, an important one. I was induced to try the tent from consulting Dr. Sims' work. I think it acted as a compress and stimulant—as a compress, by adapting itself closely and firmly to the walls of the cervix and uterus, thereby tending to obliterate in a measure the minuter capillaries in its path, and called in muscular contraction to aid it by stimulating the uterine muscular fibres to endeavour to expel a foreign substance. There was here present a tendency to antero-lateral version. Am I not warranted in crediting this muscular contraction as materially aiding to correct the malposition?

As to the insertion of a second tent, immediately after removing the first, with Dr. Sims's ideas in my mind, I feared at least some increase of pain, but took the precaution with both of removing the tents before introducing the speculum.

The glycerine seemed to exhaust the uterine bloodvessels of all the serum they could possibly furnish, relieving all congestion, and, from its antiseptic properties, allowing the tent and wad which had remained in situ for twenty-four hours to be removed without odour.

CASE II. Mrs. F., æt. 23 years, white, native of United States, married, with four children, having had excessive flooding at the time of the birth of each.

May 15, 1867. Called in during absence of family physician, Dr. W. G. H. Newman, and delivered her of a male child; vertex presentation; twelve hours in labour; the placenta and membranes coming away promptly; the uterus contracted firmly, but again relaxed with considerable flooding; patient fainted twice; hemorrhage finally controlled by the use of ice and ergot, but treatment was pursued for at least four

hours after the delivery of the secundines. During the ten days succeeding delivery, the patient was subject to attacks of nervous, fainty spells, with marked anæmia and loss of appetite; at which time Dr. Newman having returned to the city took charge of his patient, and I saw her no more until

*Aug. 13*, when I found her suffering from an excessive menstrual flow, which lasted five days, and was finally checked by the alum plug, and internal use of plumb. acet. cum opio. She was in a very nervous state, having just lost her child. After the flow was checked, on making a vaginal examination, I found the os uteri low down in the vagina, abraded and engorged, with cervical leucorrhœa. The treatment pursued during the month was locally the application of arg. nit. in substance to the cervix and os; cold hip-baths; internally, ferri valerian et quin. sulph. ña gr. j ter in die, and potass. bromid. in gr. xx doses, with abstinence from sexual intercourse.

*Sept. 2*. The menses returned, anticipating their proper period by about eight days; the flow was excessive, lasting about seven days, and finally checked as before, but recurred on the 17th for two days. Abrasions and leucorrhœa still marked.

On *Oct. 4* and *Nov. 1*. The menstrual flow returned, lasting about a week each time, and requiring active measures as before to check it. The patient now complains of great weakness, headache, and pain in the back, with a leucorrhœal discharge; and on

*Nov. 15* made a speculum examination, finding os engorged and inflamed; no abrasions; cervix filled with a leucorrhœal discharge; cauterized cervix, and used sponge tent and wad of cotton batting, with glycerine.

*16th*. On removing tampon, found it dripping wet; tent dilated; no odour; os was pale and open; no sign of discharge from cervix. Patient was relieved of the pain in the back and head, and had a profuse watery discharge, but no sign of blood.

*27th*. No return of symptoms, but used the glycerine tampon, producing another profuse watery discharge; and on Dec. 1st, the menstrual flow returned in normal quantity and duration. The menstrual period also recurred in January, being moderate and regular; the patient's general health being much improved.

This patient was unfortunate in having for a husband a man addicted to drink, and in consequence disposed to excessive venery. She had become anæmic from the exhausted nerve force, and the constant drain upon the arterial system of the uterus. The uterus has passed into a state of chronic congestion and irritation, and the slightest ovuline excitement stimulates the uterus to relieve itself of its abnormal condition, even to the jeopardizing of life. Careful examinations were made from time to time, and no abnormal growths discerned.

In the general treatment I found the potass. bromid. answer very well at first to correct the nervousness, but the system became accustomed to its use, and I substituted for it the tinctures of assafœtidæ and valerian with advantage. I also derived great benefit from the assiduous use of iron in its different forms.

NOTE.—In order to complete the history of the last case, I would state that, in the month of February, 1868, Mrs. F. became again pregnant, passing through her term comfortably, and on October 8th was delivered of a female child, the placenta and membranes coming away promptly and the uterus contracting firmly; but, despite my former experience, uncomfortably impressed upon my mind, I was



unable to prevent a profuse hemorrhage. The child died within ten days of erysipelas neonatorum. On October 20th and 30th the patient was seized with severe flooding; no clots, placental or membranous debris; os dilatable, and uterus but little enlarged and firm; both times requiring the use of the tampon to check the flow. November 1st. Patient was attacked with phlegmasia dolens of the left leg, and a constant deep-seated pain in the region of the uterus, which subsided almost entirely under treatment in about three weeks' time. At the commencement of this attack, on using tr. ergot to control the flow, she complained of no uterine pain whatever, but a severe spasmodic pain in the left leg with each dose. December 3d and 29th. On both these occasions has been attacked with severe flooding, requiring the use of the tampon and ferri persulph. to check the flow; it lasting from four to five days each time.

*February 20. Spurious Labour Pains at Fifth Month—Accompanied by Convulsions.*—Dr. D. W. PRENTISS reported the following case:—

Mrs. M., æt. 22, brunette, full habit, native of the United States. Mother of one child, had convulsions following previous labour, and lasting for two weeks, during which time she lay unconscious.

*June 20, 1865.* Supposes herself to be in the fifth month of gestation, having felt motions of child on 12th of June. Abdomen moderately enlarged, quite soft and flaccid.

*25th.* Ate a hearty dinner of cabbage, beets, new potatoes, and squashes, besides meat.

On morning of 26th, had paroxysmal pains in the lower part of abdomen at intervals of three-fourths of an hour, which, however, became more severe and frequent until afternoon, when I was called in and found her with all the symptoms of threatened abortion, except there being no discharge from the vagina. The pains were very severe, and occurred at intervals of five or ten minutes—the abdomen becoming hard and the patient straining with each pain. The patient was very confident herself that miscarriage was about to take place. The abdomen was soft and compressible between the pains, and I thought I could distinguish fetal motions distinctly, although they were not strong. Patient unable to pass water except in the sitting posture. Twenty drops McMunn's elix. of opium ordered at once and to be repeated if necessary. Two hours later, condition of things much the same; pains even stronger than before, but not so frequent. On examination per vaginam, found the os uteri quite low down in pelvis, directed backwards; the fundus thrown a little forward, giving rise probably to the difficulty experienced in voiding urine in the morning. The os was roughened as though ulcerated, and tender to the touch. I purposely kept my finger in position until the occurrence of the next pain, but there was no hard tumour pressing down upon, nor any rigidity of, the os. The result of the examination gave rise to the belief that the pains were due rather to spasm of the bowels and abdominal muscles than to uterine contractions. 9½ P. M., was sent for again on account of the patient's having convulsions—had eight or ten in quick succession previous to my arrival. Immediately sent for a mixture of chloroform and sulph. æther. Before its arrival two convulsions occurred sufficiently severe to require the strength of two men to restrain her. The anæsthetic was administered on a handkerchief, 3ij being used altogether, and the patient under its influence passed from the stage of intoxication to a quiet sleep. I remained until eleven o'clock, watching for a return of the convulsions, but the gentle sleep continuing, I left with instructions to be sent for if they returned. They did not return, however, and the patient slept until daylight, Tues-

day morning, when, the pains recurring, she awoke. The pains were now neither so strong nor so frequent as yesterday, but she was nervous, tremulous, and a little wandering in mind. Complaints of intense headache; bowels had not been moved; water passed freely; pulse, 112. Ordered blood to be taken from back of neck by cupping, to the extent of sixteen ounces.

27<sup>th</sup>. afternoon. Paroxysmal pains continue about the same. Still no vaginal discharge. Ordered tincture of valerian in half-drachm doses. Headache much relieved by the cupping.

28<sup>th</sup>. Improved. Pains and headache less; bowels not yet being opened, an enema of castor oil and oil of turpentine was ordered; also, full doses of quinia. Injection not operating by afternoon, 3ss castor oil was administered by mouth.

29<sup>th</sup>. Much better; scarcely any pain, but still very nervous; bowels not yet moved; bottle citrate magnesia sol., ordered. Quinine and valerian continued.

30<sup>th</sup>. Convalescent. Still no action of the bowels. Treatment continued.

July 3. Entirely recovered. Bowels freely moved since last record.

To complete the history of the above case, I make the following extract from my journal:—

Sept. 29, 1865. Attended Mrs. M in confinement. Vertex presentation. Duration of actual labour, seven hours. Female child of eight months' development, healthy. Funis coiled once around neck. Mrs. M. had fallen down stairs, Sept. 14<sup>th</sup>, which caused a bloody discharge from vagina continuing two days. On the 22<sup>d</sup>, I was called in and found her suffering from severe headache, with paroxysmal pains in the abdomen, occurring at irregular intervals. Bearing in mind the previous attack and fearing convulsions in this; cups were applied to back of neck, and ext. belladonnæ administered internally. The headache was relieved but the abdominal pains continued at intervals up to ten o'clock P. M., Sept. 29<sup>th</sup>, when they became regular and hard, and the child was born at five o'clock the following morning. Mrs. M. at her previous confinement (Nov. 1863) had very severe convulsions commencing the eighth day *after* confinement and continuing two weeks."

It will be seen by comparing the date of the subsequent delivery (the child being of eight months) with the date of quickening, that the latter took place at the usual time, viz: four and a half months, and that the convulsions occurred at five months.

Dr. Prentiss called attention to two points in the above case which he considered worthy of attention: 1st. The early stage of pregnancy at which spurious labour-pains occurred. 2d. The supervention of convulsions as early as the fifth month, and the very happy effect of the chloroform in controlling them. Of the former, I know not whether it is really so uncommon to have false labour-pains in the early months of pregnancy or not; but there is no mention of the fact in text-books nor medical journals that I have been able to find. These symptoms are neither unusual nor unlooked for during the latter days of gestation, and we are therefore on our guard at that time.

The frequent occurrence of cases believed to be instances of threatened abortion, and which is considered to be averted by appropriate treatment, renders it possible that the condition of the patient above described, may exist in many instances without attracting especial attention; and this is

the more probable, since the usual treatment for threatened abortion would, to a considerable extent, be proper treatment for false labour-pains.

The pathology in the present case, I consider to have been principally spasm of the stomach, bowels, and abdominal muscles, extending its influence to the structure of the uterus itself, producing a neuralgic condition of this latter organ; the cause of spasm being irritating ingesta of cabbage, new potatoes, beans, etc., remaining in the alimentary canal; and the remote cause of the womb's participating being an irritable condition, induced by previous attempts, not heretofore mentioned; on the part of the patient to produce miscarriage, drinking tansy and pennyroyal tea, etc., and among others, the novel expedient of standing on her head. An evidence of the neuralgic element present in the case, is to be found in the beneficial action of quinia. I plead ignorance as to whether neuralgia of the uterus alone is capable of simulating labour-pains.

2d. The second consideration, however, is by far the more interesting. The usual time for the puerperal convulsions is either immediately preceding confinement, during that process, or immediately subsequent to it; the second period mentioned being the most favoured one. Ramsbotham mentions three cases only, that he has been able to collect, occurring in the earlier months of pregnancy—two from Perfect, before quickening (*Cases of Midwifery*, xlv. and xlvi), and one from Meigs, at five months (*Meigs's Sys. Obs.*, p. 408). I have examined the complete file of Braithwaite's *Retrospect* for other such cases, without success.

I conclude, therefore, that puerperal convulsions in the earlier months of pregnancy are of rare occurrence.

At this point, also, I wish to call especial attention to the immediate and permanent effect of the anæsthetic in affording relief, as having an important bearing upon the pathology of this terrible disorder.

Writers upon the pathology of puerperal convulsions may be divided according to their views, into four classes, as follows:—

1st. Those who consider the disease a form of apoplexy, of which class are Ramsbotham and Meigs.

2d. Those who explain the phenomena upon the theory of reflex spinal irritation and pressure, of which class W. Tyler Smith of London, is the representative.

3d. The *Eclectics*, who refer some cases to the one and some to the other theory.

4th. Those who hold to the blood-poisoning theory, as indicated by the albuminuria.

A discussion of these various theories at present would occupy too much time; they are merely offered as suggestive points for discussion.

It will not, however, be amiss to follow out some indications of pathology deducible from the case in hand.

It seems to my mind clear that the cause of the convulsions is to be found in the reflex irritation.

Here was a gravid uterus, rendered irritable by an indefinite number of attempts to produce abortion; here was superadded an alimentary canal, overloaded with the most indigestible of vegetables; and here, finally, was permanent relief obtained from the administration of the most powerful agent we have for the relief of nervous excitation. This patient was a plethoric woman, who might naturally be expected to be liable to apoplexy. But if the attack had been apoplectic, would not the chloro-

form have increased the mischief by increasing the amount of venous blood in the brain?

What explanation should also be given of the powerful muscular contractions, which are never found in true apoplexy? The medulla oblongata and spinalis are the seat of involuntary muscular action, and to them should we look for the proper explanation of this phenomenon. The history of this case is, therefore, an argument in favour of reflex nervous irritation as a cause of puerperal convulsions, as indeed are, I think, all those cases which are benefited by the anæsthetic treatment. It would be very interesting to follow out the train of argument here suggesting itself, into purely theoretical domain; but the limits of the present paper would not allow of its completion. I shall, therefore, content myself with stating that of twenty-three cases of puerperal convulsions collected from "Braithwaite," those treated by remedies addressed to the nervous system gave the most favourable results:—

7 cases treated by inhalations of chloroform, morphia, or galvanism.

13 cases treated by bleeding and purgatives.

3 cases no treatment.

In that class of cases treated by bleeding and purgatives, there was generally but little apparent good effect from the remedies, the convulsions only ceasing on delivery. The same is true of that class in which there was no treatment.

In several of the cases treated by chloroform inhalation, the convulsions were cut short and did not again return, while the labour progressed favourably to its termination; and in *all* in which the anæsthetic was used, there was marked benefit.

As having a possible bearing upon the disease under consideration, I will bring this paper to a close by briefly mentioning

*A case of convulsions attending abortion at six weeks, from excessive loss of blood.*

June 7, 1866. Mrs. K., a stout, plethoric German, aged about thirty-three years. Had an abortion at six weeks, caused by over-exertion. Adherent placenta, with excessive loss of blood, to the extent of sixty or seventy-five ounces. Controlled by tr. ergot and persulphate of iron.

8th. Recurrence of hemorrhage to same alarming extent as during previous day; os uteri dilated with fingers and placenta removed. During this operation, which occupied perhaps twenty minutes, the patient had slight convulsive attacks, with loss of consciousness, every few minutes, and the prognosis seemed most unfavourable; but the placenta being removed, the hemorrhage ceased, and she finally recovered under stimulants and tonics.

## REVIEWS.

ART. XX.—*A Treatise on the Diseases of Infancy and Childhood.* By J. LEWIS SMITH, M. D.; Curator to the Nursery and Child's Hospital, New York; Physician to the Infant's Hospital, Ward's Island; Professor in Bellevue Hospital Medical College, New York. 8vo. pp. xii., 620. Philadelphia: Henry C. Lea, 1869.

A SYSTEMATIC course of lectures on the Diseases of Infancy and Childhood does not, we believe, form a part of the curriculum in any of the principal medical schools in the United States, and as the opportunities afforded for their clinical study are very infrequent, the student is compelled to seek in text-books the information which is denied to him elsewhere, if he wishes to be able to recognize the modifications of disease in childhood, and to treat his patients scientifically. A good text-book on this subject is therefore exceedingly valuable. The book before us is the work of a gentleman well known to the profession, who, in addition to being engaged in private practice, is connected as Curator with the Nursery and Child's Hospital, New York, and as physician with the Infants' Hospital, Ward's Island. Making use of the advantages which these positions give him, he has been able to incorporate in his book the results of more numerous post-mortem examinations than have been made by any other American physician who has written on this class of diseases—a fact which renders the chapters on intestinal inflammation especially valuable. The book, however, is not so complete as some already published in this country, for we find that many of the most common diseases of childhood are unnoticed. The febrile condition which is variously called gastric, infantile remittent, or typhoid fever, is not even alluded to by the author, an omission which it is difficult to explain, as in September 10, 1856, he read a paper on this subject before the Society of Statistical Medicine of New York, an abstract of which is published in the *New York Journal of Medicine* for Jan. 1857. There is no chapter on scrofula, and therefore tabes mesenterica and enlargement of the bronchial and lymphatic glands, as well as other manifestations of the diathesis, are not discussed in the book. Other subjects, on the other hand, seem to us to have received undue consideration. The chapters on Intussusception, Tetanus Nascentium, and Cyanosis, constitute almost exhaustive articles on these subjects, which, although exceedingly valuable, interesting, and well written, are better suited for the pages of a journal than of a book in which space is so economized that less than twenty pages are given to diseases so important as pneumonia, pleurisy, and bronchitis.

The book consists of two parts, the first being divided into eight chapters, which are headed: 1. Infancy and Childhood; 2. Care of the Mother during Pregnancy; 3. Mortality of Early Life—its Causes and Prevention; 4. Lactation; 5. Selection of a Wet-nurse; 6. Course of Lactation—Weaning; 7. Artificial Feeding; 8. Diagnosis of Infantile Diseases. Many of these subjects are not usually treated of in the books on children's diseases, but we think Dr. Smith has been wise in introducing them. For instance, the care of the mother during pregnancy is very essential to the

health of the child. A disregard of the rules of hygiene, over indulgence of any kind, severe labour, or undue mental excitement, will always be found to have an injurious effect upon the offspring. Two interesting cases, in which deformity of the child seemed to be a result of a strong mental impression made upon the mother while pregnant, are related by the author, and in summing up he very properly concludes this chapter by saying that if "maternal emotions affect the development of the exterior of the fœtus, as observations show and physiologists admit, the presumption is strong that they may affect also the proper development and adjustment of the parts of the brain, an organ so complex and delicate, and therefore give rise to idiocy." The large mortality of early life is attributed to congenital defects of development, to inherited vices of constitution, to the disregard of hygiene which exists in large cities, to the great prevalence of zymotic diseases; but, above all, to the improper and unwholesome diet of the great majority of infants in large cities. In New York City the mortality among the foundlings who were, until recently, dry-nursed, reached almost 100 per cent.; and a great decrease in the mortality has occurred since the employment of wet-nurses. As the same result has always been found to follow similar experiments abroad, there is no doubt that, wherever practicable, an infant should be nursed by its mother or a wet-nurse. Since circumstances very frequently render this impossible, an appendix is added, in which is given a list of articles, and their mode of preparation, to be used where a substitute for the mother's milk is required. Many of the other causes of disease and death are removable, and much may therefore be done by physicians towards lessening this mortality. The marked improvement which generally takes place when a child with cholera infantum is removed from a crowded court to a healthy place in the country, is a familiar proof of how much can be accomplished by improving the hygienic condition of the patient.

Following Dr. Donné, our author lays down some rules for ascertaining, before the birth of the child, whether the milk of the mother is likely to be of good quality and sufficient in quantity. He says that, upon squeezing the nipples, if the colostrum which is thus obtained be found to be abundant, and to contain yellowish streaks, of more or less consistence, which are rich in milk globules of good size, and without the admixture of mucous globules, the milk after parturition will be good and plentiful. Women suffering from phthisis should not nurse. On the other hand, the existence of syphilis does not furnish a contraindication, for in all probability the child already has the disease, and may be treated by the administration of medicines to the mother. Inflammatory affections, and even the essential fevers, if mild, are not found to interfere with the secretion of milk, and nursing may be continued during their course in the summer months, when there is so much danger attendant upon weaning. This danger, Dr. Smith thinks, is sufficient to warrant the continuance of nursing even after the mother has become pregnant. It is, however, to be recollected that the child *in utero* may be injured if lactation be too long protracted. In cases where, from any cause, the secretion of milk is deficient, and suction and other ordinary remedies have been tried in vain, the leaves of the castor oil plant, either applied to the mammary glands as a poultice, or administered internally as a decoction, have been of much service; and, in other cases, electricity applied to the breasts has been found to stimulate them to secretion. But all these means will fail if the patient's strength is not sustained by good diet, iron, and tonics. In the

condition known as galaetorrhœa, tannic acid, and cold applications locally, and *nux vomica* by the mouth, have been followed by improvement.

The chapter on the diagnosis of infantile diseases is well written. Deprived of many of the aids by which a physician is generally able to diagnose the diseases of adults, in treating the affections of children he is, of necessity, more observant of the manner in which the various functions are performed, of the expression of the features, the position of the body and of the limbs, the movements, the character of the cry, the frequency of the respiration, and its deviation from a healthy character—the number of the pulsations of the heart, and the heat of the surface. No one can correctly appreciate the changes induced by disease unless he be thoroughly familiar with the habits of infants and children in health; a knowledge which Dr. Smith believes to be by no means general. In a series of tables he gives the result of a number of observations which he has made in regard to the frequency of the respirations and the pulse. These observations have been made upon children in the first half hour of their existence, and upon others of different ages, up to the close of the first year. From these tables we learn that the frequency of the pulse in health may range between considerable limits; and the same remark is true, to even a greater extent, of the respiration, especially during active movements, or excitement of any kind.

The second part is devoted to a consideration of the different diseases of childhood, and is arranged as follows: 1. Diseases of the Cerebro-Spinal System; 2. Diseases of the Respiratory System; 3. Diseases of the Digestive System; 4. Zymotic Diseases; 5. Diseases of the Skin; 6. Diseases of the Circulatory System.

The diseases of the cerebro-spinal system are very fully treated of by our author. We think, however, that he has made a mistake in considering simple and tubercular meningitis in the same chapter. It is perfectly true that the diagnosis is sometimes a matter of great difficulty, if not entirely impossible; but in the great majority of cases this difficulty does not exist, and even if it did, it would scarcely be justifiable to group together two diseases which differ in the causes which produce them, their duration, result, and treatment on the plea that they frequently present the same symptoms, which, by the way, is scarcely less true of some other cerebral affections, and must tend to impress the student with the idea that the distinction is unnecessary, which we are very sure our author is far from thinking. While speaking of the diagnosis of cerebral diseases, Dr. Smith takes an opportunity to allude to the value of the ophthalmoscope, which he thinks may be used almost as readily in children as in adults. We have ourselves known of its being used in infants without occasioning any discomfort to them.

Various abnormal conditions of the brain are then passed in review, and after discussing some of the more common cerebral and spinal diseases he devotes a long chapter (24 pages) to the subject of tetanus nascentium. This article, as we said before, contains much useful information and evinces careful research. Forty cases of the disease have been collected from various sources; in 32 of these death occurred, in the remaining 8 a return to health took place. These figures, however, do not indicate the ratio of mortality; as in so fatal an affection as this every recovery is of course likely to be recorded in print. In New York the disease appears to be of frequent occurrence, and it was formerly very common among the negroes at the South. From the paper we learn that the dis-

case may begin at any time between the first and twelfth day of existence; the great majority of cases occurring before the eighth day. It begins in some cases so soon after birth that it may be called congenital. Among the causes which are particularly mentioned are want of cleanliness, both personal and domiciliary, and careless dressing of the umbilical cord. The very early age at which the child is attacked has led physicians to believe that it is dependent upon inflammation of the umbilical vessels, and in most of the cases in which an examination has been made, these vessels have been found to be inflamed, and in some instances filled with a puriform liquid which may, however, be nothing more than the disintegrated clot. On the other hand, in some cases this explanation is unsatisfactory, for observers equally competent have failed to discover these vessels either inflamed or in a state of sphacelus, but have found evidence of inflammation of the cerebro-spinal system, and in a few cases extravasation of blood into the spinal canal. In 31 of the fatal cases, the greater number ( $\frac{2}{3}$ ) lived only two days. Of course in a disease where the mortality is so great, no known medicinal treatment is likely to be of much avail. Opium and the sedatives have been recommended and may be tried. Chloroform will relieve the spasm but has no control over the course of the disease. On the other hand, the preventive treatment may diminish the number of the cases. This should consist in an improvement of the ventilation, the more careful dressing of the cord, the protection of the infant from draughts, and the observance of all the laws of hygiene. To show the great importance of ventilation, the reduction of mortality which was brought about by Dr. Clarke, in Dublin, is referred to. "At the conclusion of the year 1782, of 17,650 infants born alive in the lying-in hospital of this city, 2944 had died within the first fortnight, that is, nearly every sixth child." In nineteen cases out of twenty the disease was trismus. After the adoption of a more thorough system of ventilation the mortality was reduced to one in nineteen.

The next section is devoted to the consideration of diseases of the respiratory organs. The chapter on pseudo-membranous laryngitis has been written with great care. Guterbach's statistics of tracheotomy, which have been recently published, are quoted. These statistics prove, it is thought, that if the operation were more frequently performed, it would be more highly estimated. Even in unpromising cases it may sometimes be justifiable, as it secures to the little patient an easier death. Under two years of age it is not likely to be as successful as in older children, and in cases complicated by capillary bronchitis or pneumonia, the prognosis is of course unfavourable. In the chapter on capillary bronchitis, Dr. Smith points out the way in which some of the lobules of the lungs may under certain circumstance become inflamed. He says: "Minute abscesses, usually directly under the pleura, have occasionally been observed at the autopsies of those who have recently had capillary bronchitis, and pathologists are not agreed as to the mode in which they are produced. Some of them, if not all, are evidently connected with the minute bronchial tubes, and the quantity of pus contained in each is not usually more than one or two drops. The most reasonable view of their causation is that they are produced in the terminal tubes, where the mucus and pus collect. The pus acts as an irritant and causes inflammation, and the inflammation increases the quantity of pus. The walls of the tube, which is now the seat of an abscess, are destroyed by ulceration, and probably, also, some of the contiguous air-cells." Pneumonia, as is well known, would frequently



escape detection in infancy and childhood were it not for the physical signs, and even with the aid afforded by these, the diagnosis in the lobular form is by no means easy in many cases. In the treatment of pneumonia small doses of aconite or veratrum viride are recommended as substitutes for bloodletting. When, however, solidification has taken place antimony in small doses may be prescribed: but in sickly, sallow children this depressing treatment will not be tolerated, and the restorative treatment will be found to be more successful. Our own experience induces us to believe that in no case is antimony or veratrum viride ever necessary. The treatment of pleurisy does not differ from that recommended for pneumonia except in the abstraction of a moderate quantity of blood.

A long chapter in the section on Diseases of the Digestive System is taken up with the consideration of the subject of intestinal inflammation. Dr. Smith does not believe that cholera infantum depends upon an inflammatory condition of the intestines, although it certainly has a marked tendency to produce it. Most American writers consider the various forms of disease which are classed together under the name of summer complaint as essentially one and the same affection, and identical with that which has been described by English and Continental writers under the name of entero-colitis. From this view our author seems to dissent, for he says that "post-mortem examinations establish the fact that it (cholera infantum) is not an inflammatory disease. \* \* \* Intestinal inflammation frequently succeeds cholera infantum, and some writers describe it as a stage of that disease. Properly, the inflammation should be regarded as a distinct affection, just as enteritis, which sometimes results from cholera morbus, is not considered as a stage of that disease but a disease in itself." It must, however, be admitted that inflammation of the intestine—possibly on account of its greater susceptibility in early life—is a more common sequela of cholera infantum than of cholera morbus. The autopsies made by the author in cases of cholera infantum showed merely enlargement of the solitary glands, and in one instance of Peyer's patches. The treatment recommended does not differ from that generally employed in this country.

An abstract of the records of the post-mortem examinations in 82 cases of intestinal inflammation in the infant is also given. In 81 of the cases there were lesions indicating inflammation of the mucous membrane of the colon; in 69 there was enteritis, which was either confined to or most marked in the ileum; the solitary glands, both of the large and small intestines, and generally Peyer's patches, were involved: in some cases ulceration was found, in others softening. The rectum was usually unaffected. The liver has been generally supposed to be more or less involved in this disease, but these examinations do not seem to warrant this impression, for to quote from the book:—

"There is no evidence from the post-mortem appearance of the liver in these cases, of any congestion, or torpidity, or hyperactivity, or perverted secretion. The size of the liver was in some cases very different in those about the same age, but probably there was no greater difference than usually obtains among glandular organs within the limits of health. In most cases the liver was examined microscopically, and the only fact worthy of notice observed was the variable amount of fatty matter. Sometimes it was in excess, sometimes in moderate quantity, or rather deficient, and sometimes in greater amount in one portion of the organ than another. The prevalent belief, then, that the liver is greatly affected in the summer epidemic of entero-colitis receives no corroboration from the inspection of this organ."

The chapter on Intussusception is very full of information, the subject having evidently been made one of special study by the author. He has been able to collect 52 cases, the particulars of which are given in the appendix. In 34 cases in which the child's condition at the time of seizure is noted, the intussusception occurred 17 times during perfect health; in the remaining 17 the child was suffering from some disease, which was generally some form of derangement of the intestinal canal. From a table we learn also that there is much greater liability to this accident in infancy than in adult life, or even in childhood, and that death in most of the cases took place before the termination of the first week; but in many cases life was prolonged much beyond this time. Purgatives are to be avoided in the treatment of this condition, and the only remedies which have seemed to be of much service are the injections of air or liquids into the intestines, and anodynes to relieve pain. If these means fail to reduce the invagination, and the tumour can be distinctly felt, the propriety of operative interference may be entertained, but it confessedly offers but slight chances of success.

The fourth section treats of the zymotic diseases, under which head are included the eruptive fevers, diphtheria, pertussis, and syphilis. We do not find much that is new in this section. Dr. Smith is disposed to think the sulphites worthy of a trial, although his experience with them has been small. He prefers the bisulphite of soda, as this is without purgative effect, contains a large amount of sulphurous acid, and is not likely to be confounded with the sulphate by a careless druggist.

Congenital and Acquired Syphilis is the subject of a chapter in this section, but is by no means treated of so fully as the existing state of knowledge demands. More attention has been paid to the manifestation of the disease in infancy than in childhood; thus we find no mention made of the deformity of the teeth and the condition of the cornea, to which attention was first drawn by Mr. Hutchinson, and which have been the subject of a good many papers of late.

In speaking of vaccination, Dr. Smith takes occasion to express his conviction that it may be the means of inoculating the infant with syphilis, but thinks that this accident is less likely to occur if the lymph, and not the scab, be used.

Very few of the skin diseases of children are considered in the next section. The only eruption which the author has thought it worth while to notice are erythema, roseola, eczema, and scabies. Erysipelas is also described in this section, and we think, improperly, for it is no more a skin disease than measles or scarlet fever is. Two or three cases have occurred which are regarded as furnishing conclusive proof that erysipelas may, as well as syphilis, be communicated by vaccination. Thus, a little girl had an attack of erysipelas while the vaccine vesicle was still upon her arm; the scab taken from her was used to vaccinate two infants, both of whom, within twenty-four hours after the operation, manifested symptoms of erysipelas. Another similar case in which the erysipelas proved fatal has also come to the knowledge of the author. If these observations are correct, and there is every reason to believe that they are, they do much towards confirming the general impression of the essentially zymotic nature of erysipelas. The chapter on erysipelas contains a table in which are given some details of 38 cases, occurring in infants varying in age from 7 days to 19 months. In the text, however, there is a reference to a case in which erysipelas appeared on the second day after birth, death taking

place on the ensuing day. The mother of the child died of puerperal fever, having apparently contracted the disease in consequence of being attended by a gentleman who had pricked his finger while making a post-mortem examination in a case of erysipelas, and in whom symptoms of angieolencitis were soon after fully established.

The next section contains only one chapter, and that is headed Cyanosis. Dr. Smith, in 1863, read a paper before the New York Academy of Medicine on this subject: this paper contains an analysis of 191 cases, and from these cases he derives the facts which are here given. Neither the theory which ascribes the blue discoloration to the intermixture of venous with arterial blood, nor that which explains it by the occurrence of venous congestion, is regarded as entirely satisfactory, and he therefore contents himself with the following definition: "Cyanosis is due to vices or defects in the organism, usually congenital, which prevent the free and regular flow of blood to, through, or from the lungs."

We have thus passed in review the most important of the chapters of this book, and it only remains for us to add that we regard the book as a valuable addition to the treatises on the subject. The description of the pathology, symptoms, and treatment of the different diseases is excellent. The formulæ which are interspersed through its pages will be appreciated by the young practitioner.

The book is remarkably free from typographical errors; the most important which we noticed was intercranial for intracranial. J. H. H.

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ART. XXI.—*Das Verhalten der Eigenwärme in Krankheiten. Eine Anleitung zur Thermometrie bei Kranken und zu ihr Verwerthung für die Erkenntniss der Gesetze des Krankheitsverlaufs, sowie für eine schärfere Diagnose und Prognose.* Von Dr. C. A. WUNDERLICH, Professor der Klinik an der Universität Leipzig; K. Sachs. Geheimen Medecinalrath, etc. pp. 384. Leipzig, 1868.

*The Course of the Temperature in Diseases: A Guide to Clinical Thermometry.* By Dr. C. A. WUNDERLICH, Clinical Professor at the University of Leipsic, etc. etc.

AMONG the recent contributions to medical science the use of the thermometer at the bedside especially deserves the attention of the practitioner. Every new fact relating to the progress and termination of disease should be to him a matter of interest in and of itself alone; but when a series of facts are discovered so numerous that they bear upon some case or cases of every day of his life, when a new mode of examination is presented which substitutes the exactness of measurement and the certainty of figures for the uncertainty and indefiniteness of judgment, they demand attention, and he cannot afford to neglect them if he would keep pace with the progress of his art, or preserve peace with his sense of duty. That clinical thermometry will render services to the physician which nothing else can, needs no proof to those who have read the later editions of Aitken's *Science and Practice of Medicine*; to these, too, Dr. Wunderlich needs no introduction; he is there quoted as a pioneer in this line of inquiry, and an authority upon everything relating to the subject. We must ask those not familiar with

the subject as presented by Aitken to find the proof of the value of the new mode in what we shall select from the work whose title we have given above. Much of what is to be found in Aitken is taken from the second edition of Dr. Wunderlich's *Handbuch der Pathologie und Therapie*, published in 1866; the present work is a complete treatise upon the subject, giving the enlarged experience and maturer views of the author. In his preface he tells us that the number of cases which have been carefully followed with the thermometer by him, or under his observation, amounts to many thousands, and the number of single measurements to millions. For sixteen years he has pursued the subject in hospital and in private practice with the pains-taking perseverance characteristic of his countrymen, and the results of his observations he gives us in this treatise. In entering upon an examination of it we propose for ourselves but an humble office; we have no additions to make to the subject, no comparisons to institute, but shall confine ourselves to presenting as briefly as possible the views of the author, and selecting from the pages of his work such facts as we think will prove of benefit or of interest to our readers.

The history of the application and measurement of heat as a symptom of disease occupies the opening chapter of the work. It is a history which presents a striking resemblance to the history of progress in every other branch of human knowledge. We find here, again, first faint indications of the direction in which the truth would be found long before a practicable way towards it was opened; we find the same discovery of facts with full recognition of their value published and acted upon to be again lost sight of and forgotten; the same happy progress in like directions made simultaneously by investigators working independently of each other, and the same slow advance over "false facts," unsound logic, and the sneers of unbelievers.

From the time of Hippocrates down to the end of the Middle Ages the importance of the heat of the body in disease was duly estimated, and it received careful attention. Galen's "*calor præter naturam*," as a definition of fever, shows that during all the time when he was the one unquestioned authority morbid heat must have been a prominent subject of consideration in the daily life of the physician. Yet it is a singular fact, noted by our author, that the importance of the phenomena of animal heat in disease dropped out of sight just at the time when, by the discovery of instruments, a careful determination of its fluctuations became possible. The explanation he finds in the iatro-mechanical doctrines of the day, which directed observation and experiment to the most apparent phenomena of fever—the disturbances of the circulatory system—phenomena which agreed too with the theoretical views then current.

The first to apply instruments for the determination of the heat of the body, instruments which he made himself, was Sanctorius (died, 1638); but it was a hundred years later that Boerhaave with improved instruments indicates a recognition of its importance; although for him increased frequency of the pulse was the pathognomonic sign of fever, yet in his aphorisms he distinctly speaks of thermoscopy. His pupil and commentator, Van Swieten, remarks at greater length upon the uncertainty of the sense of touch as a measurer of bodily heat, and upon the use of Fahrenheit's thermometer.

But this was slight advance compared with that made at the same time by another pupil of Boerhaave's, and colleague of Van Swieten—de Haen, "the first clinical teacher of Vienna and of Germany." De Haen is recog-

nized as the real founder of thermometry in disease; scattered through the fifteen volumes of his *Ratio Medendi* are numerous papers and observations upon the subject. With much that was faulty in his mode, he yet discovered many important facts, and learned how valuable an element in diagnosis and treatment is measurement of the temperature. He was acquainted with the singularly high range of temperature in the aged; he recognized the morning fall and evening rise of the thermometer in fever patients; he knew that while the patient was shivering in the cold stage, the heat of the body was actually above its normal grade; he knew, too, that the thermometer would mark a paroxysm of intermittent fever, which, so far as all other symptoms, objective or subjective, were concerned, gave no sign of its existence, but which this little instrument showed to be only apparently cured; he gathered from changes in the temperature therapeutical indications, and saw in a return to the normal rate the proof of convalescence. Yet de Haen's achievements and efforts to promulgate his views produced no influence upon his contemporaries; in spite of his high position the new doctrines were neglected and speedily forgotten, and it is left for us to recognize the value of his labours, and to see how far he was in advance of his age.

In 1740 Martin published, in England, some important observations upon the bodily heat of healthy men and animals, and in 1774 Blagden and Dobson demonstrated the important physiological fact that the temperature of the body was maintained at the normal range in apartments heated to a very high degree. To these followed John Hunter's first observation of the increased heat of inflamed parts; but he was far from the truth in rejecting the circulation of the blood as the origin of animal heat, and placing it an imaginary power independent of circulation, sensation, or will.

In 1780 the father of modern chemistry, Lavoisier, published the result of his investigation of the causes of animal heat; he had found them in the chemical processes going on in the lungs, in the union of the oxygen introduced by respiration with the carbon and other principles of the blood. Crawford, an Englishman, as early as 1779, also held the chemical processes going on in the lungs to be the source of the warmth of the body.

"At the end of the last century, 1797, appeared a work, free from theoretical disquisitions, but on the contrary of a most decided practical character, which, for the first time since de Haen, duly estimated the value of observations of temperature to the physician as a guide in therapeutical indications and results; it was the "Medical reports on the effect of water, cold and warm, as a remedy in fever and other diseases," of James Currie. Statements of the range of temperature are almost everywhere added in the reports of cases in this work, and the thermometer played a most important part in Currie's practice. By changes in the bodily temperature he tested the operation of cold and warm water, of digitalis, opium, alcohol, and antiphlogistic diet."

Our author here quotes some dozen lines, in which Currie modestly states the high estimate he had been led to place upon the bodily temperature in fevers and in other diseases, and says that Hegewisch, the German translator of Currie, states that he would have suppressed this passage in his translation only for the consideration that it was worthy of communication as a striking instance of the sad condition into which the science of medicine had fallen in England! Thus do the blind cavil at what genius sees; again we have an instance of a man in advance of his age; for

Currie's work exerted no marked influence either in his native land or in Germany, and his labours, like those of De Haen, were soon forgotten.

During this period of neglect of animal temperature by physicians, the chemical doctrines of Lavoisier constituted the accepted theory; but the physiologists now entered the field as challengers of their truth. The contest was begun by Brodie, who, in the *Philosophical Transactions* for 1811 and 1812, denied the production of heat by the change of venous into arterial blood, and maintained that its origin was to be found in the action of the nervous system. This led to a lively discussion, and to wider and more careful experimentation upon the subject. Brodie was opposed by Dalton and John Davy, and sustained by his German translator Nasse, by Earle, and by Chossat. In consequence of this discussion, the Paris Academy offered a prize upon the subject, and the treatises of Dulong, 1822, and Deputz, 1823, were published. Both sustained Lavoisier's doctrines, and sustained them by careful experiments and estimation of the chemical results of respiration, and the resulting production of heat. During this time, and up to 1830, very little progress was made in the observation of the temperature either in health or disease. The great Hufeland offered a prize for investigation in support of Currie's doctrines, which called out two memoirs of some value. Even the fourth decade of the present century added but little to our knowledge of the subject. Chomel, the first practitioner of France, and author of the article in the *Dictionnaire* of thirty volumes, rejected the thermometer, and believed the hand to be sufficiently trustworthy for the estimation of the temperature. Piorry used a thermometer with his pleximeter, but encumbered its use with so many refinements as to destroy its value; besides, and in spite of his precautions, his own observations were "wholly unreliable, and even fabulous," he having published instances of temperature in disease as high as  $38^{\circ}$  R. =  $117.5^{\circ}$  F., and placed that of health at  $32^{\circ}$  R. or  $104^{\circ}$  F. Nasse, Davy, and Brodie published, about this time, some contributions relating to the subject.

With the fifth decade began a series of earnest and more careful investigations as to the facts relating to animal heat, both in health and disease. Andral, the leading clinical teacher of the times, recognized the value of the thermometer at the bedside, and he alone, since the time of Currie, perceived that amid all the apparent uncertainty of the fluctuations of temperature in disease, there was yet a reign of law. The Faculty of the University of Halle offered a prize (1843), which was won by Von Gierse, in an essay the most extended and careful of any which had heretofore appeared. Chossat's researches upon inanition, 1843, was also a valuable contribution to the subject. H. Roger, in the *Archives G n rales* for 1844, and Demarquay continued the work, while to Zimmermann, a military surgeon in Hamm, is accorded the credit of having duly estimated the value of thermometry at a time when it was generally neglected, pursued his observations with careful perseverance, and published papers of value on the subject, extending through a series of years. We again find Nasse and Davy among the labourers in the field, and the list contains, besides, the distinguished names of Flourens, Magendie, Helmholtz, and Donders.

During this period the theory of the subject also advanced as fast, if not faster, than knowledge of the facts. To the genius of Liebig is accorded the honour of having really established, and caused to be accepted, the chemical theory of the source of animal heat, in his work upon organic chemistry as applied to physiology and pathology, 1842; and although

some of the propositions of this work cannot be maintained, or carried to the extent of application made by the author, yet "the foundation which Lavoisier laid received from Liebig an extended and well-proportioned superstructure, and the truth of Lavoisier's discovery was established by Liebig beyond all controversy."

An entirely new conception—what the author calls "an epoch-making idea"—was the recognition of the essential unity of the imponderable agents, the establishment of the doctrine of the "correlation of the physical forces." The credit of this discovery is given to Dr. J. R. Mayer, a practising physician of Heilbronn, and his doctrine of the mutual interchangeability and indissoluble connection of heat, light, electricity, and chemical combination, which at first attracted no attention, has become the accepted theory of physics, and is justly considered one of the most brilliant achievements of the human mind.

Shortly afterwards Joule, of Manchester, pointed out the correlation between mechanical power and heat, and expressed in figures the value of a given quantity of one to the other.

Thermometry, as applied to the purposes of the practising physician, entered upon a new phase of existence with the middle of the century. In 1850 and 1851, two German physicians, Bärensprung and Traube, published observations which opened a new era. The question of priority is an open one; Traube published his first measurements of temperature before Bärensprung, in a paper upon the action of digitalis, and his first published case of thermometric observation is dated in June, 1850. Bärensprung's first contribution was published in *Müller's Archives* for 1851.

"But if the vast amount of material observed and brought forward is considered, we are compelled to believe that his investigations must have begun before Traube's."

"In the mean time the decision of this question of priority is of the utmost insignificance. Both investigators have undoubtedly pursued their inquiries uninfluenced by the other, and the eminent services of both remain undiminished in value whoever may have been the first labourer in the field."

After a brief statement of the characteristics of the works of each of these pioneers, the author alludes to his own contributions and labours. A pupil of Traube's, he introduced the thermometer into his clinic in 1851, and its value became speedily so apparent that its use grew day by day until it had proved itself indispensable.

"Since fifteen years there has not been a patient under my care in hospital in whom regular observations of the temperature have not been made, and while these at first were only twice daily, since about two years they have been four to six times daily in all fever cases, and, under some circumstances, even oftener. The number of cases of disease from my clinic in which regular observations of the temperature have been taken, amounts to 25,000, and the number of single observations to several millions."

"Only after my observations had reached to hundreds of thousands did they appear to me to give a support for the answer of that most important and essential question—that question which contains all others—'Is the course of certain diseases according to rule, in accordance with any law, and can such be shown and proved by the range of temperature?'"

This question he was first enabled to answer affirmatively in typhoid fever—"abdominal typhus."

"But only after the discovery of the fact that the course of the temperature in other diseases is in conformity to law—a discovery arrived at only after the

most careful observations and the most impartial reflection—was a conviction of the immeasurable and heretofore unanticipated practical value of thermometry immovably fixed in my mind, and it became the object of my endeavours to awaken and establish this conviction in the minds of others."

After a tribute to the assistance he has received from many industrious and pains-taking students, some of them now occupying chairs in universities, he, says:—

"I may well say that our labours have not been fruitless. The measurements, which, after the first publication of my clinics, were derided, and the matter termed by a French critic a deluding exhalation, not likely to lead astray any outside of small German hospitals, where the number of appointed physicians almost equalled that of the patients, these measurements are now customary in all the clinical establishments of Germany, in most of the hospitals, with a large number of the busiest practitioners, and are looked upon as an indispensable part of the observation of every case of fever."

He then congratulates himself upon the spread of thermometry to other lands, and mentions the labours of Charcot, Porson, and Jaccoud, in France; of Simon, Sidney Ringer, and Aitken, in England; and of "Segnin in America." And now "the number of new works upon thermometry is so great that it is impossible for me to mention them all."

A mode of physical examination requires a special instrument, and a particular mode of using it. While for clinical thermometry there are many instruments, especially the thermo-electrical, which are far superior in regard to measuring minute variations of temperature, there are none for practical use equal to the ordinary mercurial thermometer with such modifications only as are necessitated by an application to the person, by the limited range of bodily temperature, and for accuracy of observation. The author gives the following requisites of a good instrument:—

"The reservoir or bulb should not be too large or too small; when it is too large it suffers in sensibility, when too small it does not come closely in contact with the parts. A diameter of about  $\frac{1}{2}$  or  $\frac{3}{4}$  of a centimeter (.18 to .28 of an inch) is the best. The spherical form is to be preferred for measurements in the axilla to the cylindrical; at least a cylindrical reservoir should not be very long, but approach the spherical form. \* \* \* The tube of the instrument must be everywhere of the same calibre, and of such a bore that a distance of two-fifths of a degree can be divided by the eye without difficulty into halves and quarters. The length of the tube must be such that the scale reaches at least twelve centimetres (4.5 inches) from the bulb, so that when the instrument is applied, the height of the mercury can be easily seen. On account of portability, however, the length should not be too great. \* \* \* The scale need only extend from 32.5° C. to 45° C. (90.3° F. to 113° F.), and if the 35th degree is 12 centimetres from the bulb the length will be satisfactory."

A division of the scale into fifths of degrees will answer for ordinary clinical observation; where accuracy is required, however, the tenths must be marked, and should be so plain as to be easily distinguished.

The kind of scale is not, of course, important. The author uses the centigrade, but gives the Reaumur also; for convenience we have reduced the readings to the Fahrenheit. As the use of this scale has been entirely abandoned on the continent of Europe, where clinical thermometry is being generally pursued, and whence will come many contributions to our knowledge of the subject, it is much to be regretted that we still adhere to a system so senseless and complicated; it would seem as if the simplicity of the centigrade scale ought to have rendered it long since universal.



Perfect accuracy of the instrument, to be assured by provings and comparison with a standard along the whole course of the tube, is insisted on.

The condition for accurate observation of the temperature is that the bulb of the instrument shall be closely surrounded by some part of the body. The axilla is the universal place of application, except for special purposes; the closed fist is unreliable as an indication of the heat of the trunk; so is the mouth, from currents of air; the rectum and vagina are of course indecent. In this connection we may express our regret that in one of the largest hospitals in this country, where clinical observations of lying-in women are made, the vagina is chosen as the place of application of the instrument; the range will only be a few tenths higher, it is true, than in the axilla, yet with this difference the results attained will suffer in their application to private practice.

In regard to the manner of applying the instrument, the axilla should be wiped dry of the perspiration, the bulb introduced, and the arm carried across the chest. Sufficient time should then be allowed for the mercury to attain its height, which will require from six to ten minutes; this period may be shortened, although at the expense of accuracy, if the instrument be first warmed, and the mercury allowed to fall to the bodily temperature.

As to the frequency of the observations, under ordinary circumstances twice daily will suffice; and for obvious reasons which will appear, the times should be between 7 and 9 o'clock in the morning, and 4 and 6 in the afternoon. So simple is the affair, however, that the physician need not be present in all cases; where necessary, the application may be intrusted to any intelligent member of the patient's household. Two daily observations are not sufficient, however, for complete and accurate knowledge of the range of temperature in a disease; there should be as many as six, made at 7-8, 9-10 A. M., 12-1 noon, 3-4, 6-7, and 10-11 P. M.

"In private practice the physician applies the instrument to the dried axilla immediately upon his entrance to the patient's room, having first warmed it in his hand; and sees that the clothing is carefully removed from about the bulb. The moment of application is noted by the watch. While the mercury is reaching its height he carries on his examination; investigates the condition of the tongue, the pulse, and the evacuations. About every two minutes he looks to see if the instrument is in place and the mercury still rising; when it has no longer risen for three or five minutes the instrument may be removed, and the observation is closed."

Perfect exactitude is not expected or necessary, except in special cases; and frequent observations approximately correct give better results than isolated ones, however minute and exact.

"As regards the rate of the pulse, it is, in practice, indifferent whether it beats 80 or 84, 100 or 104, 140 or 150 in the minute, so it is, in private practice, in regard to tenths of a degree, except in cases of extremely high range. The physician must know where and when minute observation is necessary, and where and when it is not."

The author considers an objection which must have already presented itself to the minds of every reader, in the query, "Is this mode of observation, admirable and reliable as it may be in hospitals, adapted to and practicable in private practice?" This query may be briefly answered, and we think, as satisfactorily as briefly. The objections of the time required for it, of the special study necessary to master it, of the special instrument necessary to be carried about for it, have all been advanced in regard to

auscultation. They have all been overcome simply by the value of the results derived from the new mode, and are heard of no more. Thus it will be with clinical thermometry; once let it be manifest that more information, or more reliable information, can be gained by it than by any other means, and its acceptance by the profession is assured. It must rest upon its merits, and these we will now attempt to partially and briefly set forth.

Much evidence in favour of this method of observation may be found in the second chapter of the work "On the Practical Value and Results of Thermometry in Disease," and we will give an abstract from it for the benefit of those who are not yet acquainted with the grounds upon which it rests its claims. It opens with an allusion to the fact that modern medicine justly places the greatest share of reliance upon the objective class of symptoms, and especially upon those of physical character; thermometry, like auscultation and percussion, belongs to this class. But there are some special points of superiority attaching to thermometry, which distinguish it and elevate it in the scale of value above all other modes of examination. 1. It is *precise*: its results can be rendered apparent to the eye; they do not depend upon judgment or estimation, but can be rendered visible, and that with the exactness which always belongs to arithmetical figures. 2. While other physical modes of exploration take note only of conditions which are stable, or which change but slowly, this method supervises a train of action which is unceasing in change, and the changes in which are only slowly made known by other signs; it is therefore a *closer and a more sensible measurer* of organic processes. 3. More important still, while other methods take note only of changes confined to certain localities and to certain organs, thermometry *observes phenomena which depend for manifestation upon processes going on throughout the organism*, and registers its observations with exactness; these processes—the chemical decomposition and recompositions out of which arises animal heat—are among the impenetrabilia of nature, and in them lies the origin of many most important diseases.

There are strong reasons, then, for considering thermometry as a valuable addition to our means of observation. Every fact relating to departure from health deserves attention by the physician, and as this instrument measures slight departures with physical exactness, it ought to be especially valued. But not only is a departure from health shown by a fluctuation in the bodily temperature, but experience has taught that these fluctuations are not uncertain and variable, but that they follow laws as unchangeable and harmonious as do other vital processes; that certain diseases have certain ranges of fluctuation of temperature characteristic of them, and by which they can be distinguished from other diseases. By the thermometer, then, we examine and accurately measure an external condition having the closest relation to and connection with the vital processes going on throughout the organism, and have learned by experience that with it we can recognize many diseases as certainly, and oftentimes much earlier in their course, than we have heretofore done by the pulse, eruption, and other symptoms.

There are two prime facts underlying the whole subject, and upon which it firmly rests. The first is, *the stability of the bodily temperature in health*. From the point of  $37^{\circ}\text{C.} = 98.6^{\circ}\text{F.}$ , the range is very limited during health; below  $36.25^{\circ}\text{C.} = 97.25^{\circ}\text{F.}$ , is suspicious; above  $37.5^{\circ}\text{C.} = 99.5^{\circ}\text{F.}$ , the territory of fever is entered upon. Within this narrow

range the man is healthy no matter what he does, no matter what may be his occupation, or the circumstances which surround him.

"A healthy man may have scanty or abundant nutriment; he may hunger or digest; drink water or stimulating beverages; have empty or overloaded bowels; he may rest, take exercise, or put forth exertion; he may be busy or idle, and his temperature remains closely the same so long as these circumstances do not affect his health. Even therapeutical measures, such as loss of blood, do not change his temperature so long as he remains well.

"The wonderful riddle yet remains that the various and ever changing factors of healthy life give so regular a result in animal heat; that thus, however different may be the amount produced, however the amount given off may vary, there is in the healthy body a regulating power constantly in action which allows the temperature neither to pass above nor fall below very narrow bounds.

"The riddle does not become easier when we reflect that this regulating power is in activity only in health; with the appearance of any deviation from the healthy state, appears immediately greater or smaller fluctuations of temperature.

"But after all this is no more enigmatical than is the uniformity of composition of the blood, notwithstanding all the various additions made to it and substances taken from it; than all the final results of organic life; the varied application of plasma to the formation of definite organic forms; the uniformity of weight in animated nature among both great and small; the preservation of individuals; of the numerical proportion of the sexes, and of species, in spite of diseases, losses, and accidents of every kind."

The second fundamental fact is the counterpart to the first, that *a departure from health is almost universally marked by a passage of the temperature above or below the points stated.* Yet for disease the range of thermometric fluctuation is not wide; it very seldom exceeds ten degrees centigrade, or from 91.4° to 109.4° Fahrenheit. But within these narrow limits can be indicated most valuable information to the physician as to the condition of the patient. We will briefly give some instances:—

The thermometer does not lie. It neither simulates, dissimulates, nor exaggerates. Therefore

"If, with vague, indefinite, and varied complainings, we find the temperature abnormal, we may know that it is no case of malingering or over-anxiety, but that the patient needs further looking after. If we find the temperature abnormal in a person who refuses to admit that he is ill, or who after an attack of disease believes himself to be well, we may with confidence assure him that he is really sick, or that convalescence is not yet assured."

It can give more certainly than anything else information as to the grade of the disease. If the departure of the temperature from the normal range is wide, the case is severe, and *vice versa*. For this purpose alone, the author considers the value of the thermometer as inestimable.

"To take only a single instance: In the so frequently ambiguous attacks of little children, the physician is sometimes tempted and sometimes forced into active measures which are superfluous, and sometimes they are too long delayed when needed, or even the best time for help passes without having been taken advantage of. The thermometer will show that there is no pressing demand for medication, or that a severe illness is developing itself. . . . An ailment accompanied by a considerable elevation of temperature is never an insignificant matter, but always the beginning of a severe disease."

As a means of diagnosis there is no other means so reliable and so accurate as thermometry. Even during the initial period of some diseases a confident decision can be made, and in other cases it enables us to absolutely reject the idea of the presence of certain diseases which are simu-

lated, and which, without this aid, would continue probable until further progress cleared away the uncertainty.

But it is not alone in absolute diagnosis that the thermometer is of assistance; the various modifications of individual diseases are shown by it; the passage from one stage into another; the periods of exacerbation and remission; the development of complications; the severity of the disease, and the degree of danger, are all indicated by it; and these particulars as often and as urgently call for the judgment of the physician as diagnosis.

A large number of diseases show a regular range of temperature; it has been so frequently observed and recorded, that a curved line marking the daily range represents a disease as plainly as the outlines on a map represent a country. Now, this range being known,

"So long as the course of the temperature in a curable disease corresponds with the typical range may the physician, almost without exception, rely upon it that nothing unfavourable is going on; he may spare himself many other modes of investigation; on the contrary, as soon as an unusual deviation of the temperature shows itself, it must be looked upon as an important, as it is frequently the first, warning of some complication; and by careful investigation, such will be found frequently when otherwise unanticipated."

The thermometer is the most reliable, indeed the only certain means of proving the actual entrance upon convalescence. If the temperature be normal, all is well; if not, there is mischief going on, however favourably the case may appear in other respects.

These instances will suffice to convince any one of the value of the thermometer in medicine; it must, if even it does but a fair portion of what is claimed it will do, be termed inestimable; it is not only a desirable addition to our resources, but it is in many cases indispensable.

"The physician who judges of fever cases without a knowledge of the facts of thermometry, and without taking note of the temperature, is like a blind man trying to find his way. With much practice and great intelligence the blind man may succeed; but he will more frequently fail, and always do only with great difficulty and unsatisfactorily what to him who sees requires no effort."

Limited as is the range of temperature in health, there is yet a range—that is, no absolute fixed point marks health either in the average or in individuals. Yet the range is extremely limited, not extending beyond half a degree, and the fluctuations are marked by regularity as to periods of the day; thus the lowest point is reached in the morning hours between two and eight, and the highest in the afternoon between four and nine. In disease this range is wider, extending from one to one and a half degrees (centigrade), and even as high as five; marked instability of the bodily temperature is a characteristic of disease, as well as variation of its degree. These exacerbations and remissions observe the same rule as those of health; the lowest point is reached in the morning from six to nine, and the highest from three to six in the afternoon.

"This course is the rule in all kinds of diseases through their whole course, with the exception of malarial fever, which, with extreme frequency, shows exacerbations at other and varying times of the day, and pyæmia whose paroxysms are fixed to no particular hour; and sometimes the fever of tubercular and phthisical patients, which not seldom presents a morning exacerbation."

These daily fluctuations are, of course, variable, dependent for modification upon various causes, such as intensity of the disease, the regularity and irregularity of its cause, its improvement, or otherwise the presence

of complications and the effect of therapeutical measures, yet the morning fall and evening rise follow the general rule stated in disease with the exceptions mentioned. Therefore, several observations of the temperature must be taken daily; but, as before said, numerous observations, if not exact, give a better means of judging of the patient's progress, and the course of the disease than only one daily made with the extremest nicety, for in general practice, minute exactitude is not required, errors of two or three tenths of a degree (centigrade) not being of moment. Still, the author cautions against too many daily observations by the beginner as likely to confuse and embarrass; from two to four will do, and if two, they should be made at the periods of daily exacerbation and remission.

To exhibit the daily course of the temperature in a case of disease, a curved line is drawn, running through the degrees touched at each time of observation, and such line presents, of course, hills and valleys, points of elevation and points of depression, marking periods of ascent and of descent of the temperature. The daily difference is, of course, the number of degrees and fractions of a degree from the lowest point to the highest; the daily average can be reckoned in a moment; the "latitude" of the exacerbation and remission is only shown when there have been numerous daily observations, this term being applied to the length of the line above or below the daily average.

A consideration of the daily average of the temperature is of the highest importance in febrile diseases; it is the safest reliance as to the degree of fever:—

"In moderate fever the mean temperature of the day does not rise above  $38.5^{\circ}$  C. ( $101.3^{\circ}$  F.); with a daily average of between  $39^{\circ}$  and  $40^{\circ}$  ( $102.2^{\circ}$ — $104^{\circ}$  F.), the fever is considerable; if the average rises above  $40^{\circ}$  C. the fever is of high grade."

Many points of diagnosis and prognosis depend upon the daily average. For instance,

"The high daily averages, above  $40^{\circ}$  C., are found in pernicious diseases, in scarlet fever, severe eruptive and abdominal typhus (typhoid fever), severe pneumonia. In these diseases a favourable termination may ensue in spite of the high temperature. But in other diseases, on the contrary, when the daily average runs up to such a point, it may be considered that a fatal termination is approaching."

The daily difference of temperature presents some points of value, although it is not of nearly so much value as the average. The indications of the same amount of difference vary according to the daily average; thus, with an average of  $37^{\circ}$  C., a daily difference of  $1^{\circ}$  C. is scarcely worth consideration; while, with an average of  $37.5^{\circ}$  C., it would indicate some complication or disturbing influence.

"If the daily difference increases by the daily minima falling more and more (increasing difference with decreasing average), it is, in acute diseases, a sign that the patient is on the road to convalescence.

"If the difference increases by the exacerbation points rising (increasing difference with increasing average), it is, on the contrary, a sign of bad import."

The period of the day at which the maximum is reached, also affords some ground for judgment as to the case when the fluctuations of several days can be compared. Thus, if it occurs earlier, it indicates a disease still at its height and severe in grade; on the contrary, its later appearance indicates improvement.

The latitude of the exacerbation exceeding that of the remission is also an unfavourable indication, and the reverse.

But if several, or at least two, daily observations are necessary throughout the course of a disease, in order to obtain all the benefits which clinical thermometry is capable of rendering, it must not be considered that single observations are without value. To the value of single measurements of the temperature the author devotes the eighth chapter of his book, and although he terms it in general an unsatisfactory proceeding, he yet gives many instances of the benefit to be derived from it, some of which we select.

First, a single observation will decide pretty certainly whether the complaints of the patient are just or not; in this respect, the thermometer must frequently prove of great assistance to our brethren of the army and navy, especially as a time-saver. Next,

"The verification of a temperature under  $38^{\circ}$  C. ( $100.5^{\circ}$  F.) is important as showing that, at that moment at least, fever did not exist. The nearer to that point, however, it is found, the more probability that it may pass it, and the greater necessity for further observations."

"Up to  $38.4^{\circ}$  ( $101.1^{\circ}$  F.) the case may be termed mildly febrile, but above that it is decidedly fever. The period of the day at which the observation is made, must always be considered; an equal degree of temperature found in the morning, the period of remission, is of more serious import than in the afternoon, the time of natural exacerbation.

"The temperature sometimes reaches a point above, and even considerably above, that of 'high fever heat.' Such elevations are by no means to be looked upon as an expression of an excessive rise of the fever, but they are often observed under circumstances having no relation to the development of the fever. Either the other manifestations of fever are absent in these cases or they do not correspond in intensity with the temperature. Such elevations may be termed hyperpyretic.

"When the mercury reaches  $41^{\circ}$  C. ( $105.9^{\circ}$  F.) the suspicion is justified that the temperature is no longer the mere expression of the fever; this suspicion should be strengthened by a further rise, and when the height of  $41.5^{\circ}$  C. ( $106.7^{\circ}$  F.) is reached, it passes into tolerable certainty."

"The circumstances under which so high ranges of temperature are observed are diverse:—

"*a.* They occur in diseases perfectly devoid of danger, but which are characterized by violent attacks of fever of short duration (intermittents). Here the temperature ascends at once to  $41^{\circ}$  C. without indicating danger, and falls as rapidly.

"*b.* There are certain diseases which show, as their chief characteristic, malignancy. \* \* \* In such the temperature is frequently seen to reach an unusually high point, but whether it be the cause or the expression of the malignancy remains yet doubtful. Such instances occur most frequently in typhus, the acute exanthemata, pyæmia, hepatitis, malignant pneumonia, puerperal fever, meningitis of the convexity, and also, sometimes, in rheumatic affections. The ascent of the temperature is in these cases sometimes tolerably steep, and only seldom does it maintain itself a day at the same height. The degree reached is important in regard to prognosis. If the temperature ascends to  $41.5^{\circ}$  C. ( $106.7^{\circ}$  F.) the prospect of recovery is slight; and if it reaches  $41.75^{\circ}$  C. ( $107.1^{\circ}$  F.) death is almost certain.

"Such elevations of temperature in such cases sometimes only occur in the agony, and are, among other signs, decisive as to its presence.

"*c.* In many diseases, and especially in such as are not essentially febrile, the temperature rises enormously in the closing hours of life, ascending rapidly up to  $41^{\circ}$  C., to  $42.5^{\circ}$  ( $108.5^{\circ}$  F.), and even nearly to  $45^{\circ}$  C. ( $113^{\circ}$  F.)."

The highest temperature ever observed in the living was by the author

in a case of tetanus; near its close, the thermometer marked  $44.75^{\circ}$  C. ( $112.55^{\circ}$  F.).

It is obvious, from a moment's consideration, that a single observation of temperature should be only accepted as a ground of judgment with great caution. Many considerations should be duly weighed before conclusions are drawn. The following points deserve special attention:—

“In children the temperature indicates generally the same that it does in adults, but children often show a greater and a more sudden change of temperature than persons more advanced in years; they show more rapid rises, in febrile diseases an earlier ascent, and a higher average than adults. The temperature also follows accidental influences easier and more considerably. Therefore, when the ‘high fever point’ is reached in children, it has not in general, nor in the same degree, the serious import that it has in grown persons; but it may, even independent of malarial intermittents, indicate a very short paroxysmal affection, or it may be seen in children without indicating danger in diseases where in adult age it would justify the most gloomy prognosis. A considerable elevation of the temperature in children should indeed demand the most careful watchfulness; but we see often enough that very considerable ascents, formed after a few hours illness, return to the normal or to a moderate height after half or a whole day. Therefore conclusions should not be jumped at from a single observation in children, even although a very considerable elevation of temperature be found.

“Many females, and also some males resembling females in bodily and mental characteristics, show the same peculiarities as children. It is principally in delicate, sensitive, nervous natures, those of hysteric constitution, in which high grades of temperature are reached from slight causes, even sometimes without apparent cause. When, therefore, the first observation in such an individual shows a high temperature, unaccompanied by other decisive symptoms, judgment should be suspended until after a second or third measurement. But an unusual height of temperature should always cause repeated and careful observations.”

It is evident that in diseases of considerable duration, such as fevers, a single measurement of the temperature cannot yield very much information. Still, there are some instances worthy of note:—

“In the beginning of an acute febrile disease, if the temperature is normal, or the rise only moderate, we may reject with tolerable certainty lobar pneumonia, variola, and scarlet fever.

“If, on the contrary, simultaneously with the development of the other symptoms, the temperature indicates a considerable degree of fever, the circle of probable affections is widened—exanthemata, quinsy, pneumonia, pleurisy, intermittent or ephemeral fever, pyæmia, meningitis—but at least we may assume with great certainty that the disease is not typhoid fever.

“An intermittent fever is not present if the temperature at the close of the cold or beginning of the hot stage does not rise to  $41^{\circ}$  C. ( $105.8^{\circ}$  F.). If, however, it goes above  $41.8^{\circ}$  C. ( $107.2^{\circ}$  F.), the diagnosis is again doubtful. Such is the case also if the temperature does not become normal in the intermission. When, also, the returns of the disease have been interrupted, and no other sign of it remains, if the temperature still indicates fever, the fever is not cured.”

During the first week of a fever the diagnosis may yet remain doubtful, and assistance may be derived from the thermometer:—

“If, during any of the early days, especially in the afternoon, a normal temperature is found, the suspicion of an intermittent is not unjustifiable; but such a condition excludes abdominal and exanthematic typhus, and the acute eruptive diseases before the eruption (except measles and chicken-pox). The development of an acute inflammation is also, under such circumstances, improbable.

“Considerable and high febrile temperatures observed during the first days

make an abdominal typhus improbable, or prove that it began sooner than the appearance of the other symptoms would indicate. Such a conclusion is still more justified if the high temperature be found in the morning. In other respects, a single observation of a high grade of temperature in the early days gives scarcely any conclusive information as to the disease; it only shows the possibility of an intermittent being excluded, that with great probability a severe disease may be expected.

"When an eruption shows itself in a case of acute febrile disease, of which the diagnosis is yet doubtful, of course the appearance of the same and the accompanying symptoms form the basis for the diagnosis; but there may sometimes be a period during which we remain in doubt as to the nature of the eruption—whether it will prove smallpox, measles, scarlatina, eruptive typhus, or a syphilitic exanthema. In such cases observation of the temperature will give this much assistance: when, after symptoms of considerable severity, the temperature falls with the appearance of the eruption, smallpox may be assumed, and if it becomes perfectly normal, it is probably varioloid. The fever is frequently lacking in the syphilitic eruptions, or they may be sufficiently distinguished by the moderate degree of the preceding fever. In measles, scarlet fever, and exanthematic typhus, on the contrary, the fever continues after the appearance of the eruption.

"When an acute febrile disease appears about to take a decided change, a single measurement of the temperature will sometimes decide whether a fatal termination is about to take place. This may be assumed with probability

—if the temperature be hyperpyretic,

—or when, on the contrary, it indicates moderate fever, touches the normal point, or falls below it, while the other symptoms show greater intensity."

The subject of Fever occupies a very considerable portion of this work. In the chapters on the "Causes of Deviations of the Temperature in Disease," and on the "General Form of the Constitutional Processes connected with Changes of the Temperature," the pathology of the subject is discussed at length, and the views of Bernard, Brown-Séquard, Valentin, Schiff, Billroth, and others stated and examined. These pathological doctrines we will not examine—not, of course, because they lack either in interest or importance. Singular it is—more than singular, it is wonderful—how many efforts have been made to solve this problem of fever, the most common manifestation of disease, the departure from health which most frequently falls under the physician's observation. It has been studied, written about, theorized on and observed by the acutest intellects and ablest minds of the profession, and yet the riddle remains unread and seems likely to remain so. Into the theoretical part of this subject we cannot enter, but will select some points for examination from the chapter on the "Course of the Temperature in Febrile Diseases," necessary to a general understanding of the subject, and likely to prove of interest to those pursuing it as a study.

The course of a febrile disease is divided by the author into several periods, during each of which the range of temperature shows distinguishing peculiarities. They are:—

"A. The period of development, or ephodus:—

1. The initial or pyrogenetic stage.
2. The height of the disease, or fastigium.
3. The indeterminate or amphibole stage.

"B. The period of recovery:—

1. The stage of change.
2. The fall of the fever—defervescence.
3. After the fever—convalescence.

"C. The appearance of complications, etc.



"D. The fatal termination:—

1. The pre-agonic stage.
2. The agony or death-struggle.
3. Death and the post-mortem period."

The pyrogenetic stage, as marked by the temperature, may present three varieties—short, medium, and gradual. When it is short the temperature rises rapidly, reaching a considerable height within a day or two. Its course is represented in the book by diagrams, which of course strike the eye and show the rise at a glance; we will give the poor substitute of figures, the scale being the centigrade. Then a short pyrogenetic stage will read:—

Morn.	Noon.	Eve.	Morn.
37.4	37.8	40.4	40.8.

Or again, in two days.

M.	N.	E.	M.	N.	E.
37.6	38.4	39.3	38.7	39.9	40.5.

"Diseases which begin with a short pyrogenetic stage have mostly only a short duration of the fever, from a few hours to a few days, whether death or recovery follows. On the contrary they show an inclination to repeated accesses of the fever, or these belong to it by nature.

"Such a stage is the rule in smallpox, scarlatina, primary croupous and lobar pneumonia, malarial fevers, and pyæmia.

"It is tolerably frequent in exanthematic typhus, febriculæ, erysipelas of the face, tonsillitis, meningitis of the convexity.

"It is never seen in abdominal typhus, in meningitis of the base, catarrhal diseases, polyarticular rheumatism."

Where the pyrogenetic stage is of medium length it may be presented in figures thus—

M.	E.	M.	E.	M.	E.	M.	E.
37.6	38.6	38.	39.4	38.6	40.	39.6	40.5.

"This form is most generally seen in abdominal typhus; so much so that the diagnosis may be made in the initial stage from this alone.

"It is also frequently seen in measles, severe bronchial catarrhs, catarrhal pneumonia, basilar meningitis and cerebro-spinal meningitis, acute tuberculosis, and polyarticular rheumatism."

It is also seen in most cases in which the fever is the result of some preceding local affection, but sometimes such cases present a more gradual rise and belong to the third division with pleurisy, pericarditis, peritonitis, and some other diseases.

The course of the temperature in the fastigium and the amphibole stage presents too many variations for us to follow them through, influenced as it is by everything which modifies the disease and, towards its termination, by tendency to recovery or approach of death. In the fastigium the maximum height of temperature attained is not of chief importance, as it was once considered to be, but much more depends upon the average daily range. The general course of the temperature is considered at considerable length, and three divisions are made into those presenting a well-marked acme (akmeartig), the continuing or regular, and "discontinuing" or irregular course. From careful study of this general course much may be learned of a case during its progress; from the daily average its severity; from an acme with sudden descent speedy recovery; from a daily ascending or descending grade a favourable or unfavourable prognosis;

from sudden variations the influence of disturbing causes, or the presence of complications, and the effect of remedies.

During the process of recovery the temperature varies very much. As a general rule the more regular the course of the preceding stages the more rapid and complete the fall to the normal point. On the contrary, if the preceding stages have been irregular, and after all those diseases which cause changes in the tissues or give rise to exudations, the fall of the temperature is slow and irregular. The period of change, or unsatisfactory decline of the disease—*stadium decrementi*—is often unobserved; so difficult does it seem to be to mark and determine, that it appears rather like an over-refinement than a beneficial distinction. The period of defervescence is, however, well marked; it is divided into two forms—*crisis*, in which the decline is rapid, occupying twelve, twenty-four, or not over thirty-six hours, during which the mercury falls from  $2^{\circ}$  to  $5^{\circ}$  C., and *lysis*, in which the decline is more gradual. As instances of crisis we transcribe the following:—

	E.		M.	E.	M.
1.	41.2		40.3	40.6	36.9.
	M.	E.	M.	E.	M.
2.	40.3	40.5	38.8	38.6	37.1.

This rapid fall may of course reach the boundary of and run into collapse temperature; it may also depend upon other influences and be followed by another rise.

“In cases of rapid defervescence it happens very frequently, especially when therapeutic measures calculated to depress the temperature have been put in force, that the descent is below the normal point, even to  $36^{\circ}$  C. ( $96.8^{\circ}$  F.) or below. Such an immoderate fall gives no guarantee that the temperature will not rise again, and only when in the following evening it does not go above the normal point is the defervescence assured.

“Rapid defervescence is the rule in regular, primary, uncomplicated croupous pneumonia, of not over a week's duration, in the variolæ and measles. . . . It is also the rule in parenchymatous tonsillitis, and it is seen in erysipelas of the face, but here gives no assurance that the fever will not begin anew with extension of the affection of the skin. It occurs in exanthematic typhus, and more seldom in scarlet and catarrhal fevers.”

In “*lysis*” the process of decline occupies several days, sometimes a week; it may present remissions. It is the characteristic termination of abdominal typhus, general in the suppurative fever of variola, and frequent in severe catarrhal fevers. In severe cases it is not seldom the course by which collapse makes its appearance.

Convalescence is marked by a return of the temperature to the normal point, and its continuance there evening as well as morning. So long as the thermometer marks a sub-febrile condition in the after part of the day convalescence is not assured; when the fact is verified that it does not then rise above the point of health, we have the most certain and reliable guarantee of a complete termination of the morbid process.

“But the temperature of convalescence is more delicate, more readily influenced, than that of health. Elevations of considerable degree are occasioned by external influences, slight bodily disturbances, unimportant errors of diet, insignificant mental exertion, by the first sitting up of the patient, or they even occur without apparent cause. Very generally they make their appearance as a consequence of the first indulgence in meat, especially when this has been premature.”

A striking diagram is given as an illustration of the latter cause :—

M.	E.	M.	E.	M.	E.	M.	E.
37.1	37.4	37.1	37.5	37.	40.2	37.2	37.3.

The pre-agonic period shows many varieties of the course of the temperature, dependent upon the nature of the disease and various other influences. Its presence is sometimes shown by marked and excessive fluctuations ranging over  $2^{\circ}$ ,  $2\frac{1}{2}^{\circ}$ , or even  $3^{\circ}$  C.; sometimes there is a steady progressive rise, more generally the ascent is in zigzags, the mornings showing a slight fall, but the evening rise being always a little higher than that of the day before. As an instance of the latter we give :—

M.	E.	M.	E.	M.	E.	M.	E.
40.	40.3	40.2	40.6	40.5	40.8	40.9	41.2 death.

Of the former :—

M.	E.	M.	E.	M.	E.	M.	E.
40.	40.3	40.2	40.6	40.5	40.7	40.9	41.2 death.

The closing part of the work is taken up with the consideration of the course of the temperature in individual diseases, and we think the selection of one or two instances will not fail to interest those who have followed us thus far through the general aspects of the subject. In opening this chapter, the author insists on the vast number of observations necessary to arrive at conclusions in regard to the range and variations of the temperature in any single disease; that careful observation and study have shown that there is a definite course of temperature for a great many diseases, and that this course is so definite as to render the disease recognizable by it to one acquainted with the details of the subject. He admits that there are many exceptions to and variations from the general rule; hence he terms diseases regular as to their temperature, *typical*, and those presenting great irregularities, *atypical*; yet that a large number of diseases do present a typical course of bodily temperature he insists upon as “no speculation, but the recognition of undeniable facts.”

“We do not know at all the cause of this agreement in the course and range of the temperature; we are no more nor less ignorant of it, however, than we are of the cause of the pustules of smallpox, or the spots of measles; or why in measles, the mucous membrane of the respiratory passages, and in scarlatina that of the pharynx are liable to be affected; or the reason why spontaneous erysipelas principally affects the face, and that the poison of typhoid fever falls upon the intestinal glands.”

This variation of the course of the temperature in some instances from the general course in a given disease, is nothing new as indicating varieties of the same disease; there is a normal pattern or standard by which the physician at the bedside compares his case; rarely does a case correspond in every particular with the standard, but nevertheless receives its name.

“So far as I know, the distinction between normal and abnormal cases of typical forms of disease was first made in modern pathology in the classical and unexcelled work of Rilliet and Barthez on Diseases of Children, and the distinction carried out with a full recognition of its practical importance. This distinction was established by these authors with the greatest sagacity, by use of all the various means of observation at that time at command, and logically correct as the idea of a normal course of disease must appear to every reflecting mind—a course which exhibits the undisturbed operation of a specific cause upon an individual previously healthy—the eminent practical value of the distinction was first shown by Rilliet & Barthez.”

We select from among the individual diseases one characterized by prominent symptoms, well-marked stages, and a definite course:—

**SMALLPOX.**—During the initial stage the course of the temperature will not serve to distinguish variola from varioloid, nor from an attack of pneumonia. The rise is rapid; during the first or second day it reaches a considerable height— $40^{\circ}$  C. or  $104^{\circ}$  F.—it may reach as high even as  $41.2^{\circ}$  C.,  $106^{\circ}$  F., and remains at about that until the first traces of the eruption make their appearance.

“Soon after the first papulae develop themselves the *temperature falls in a rapid manner*. The defervescence begins rarely on the second or third day, more often on the fourth or sixth.”

“In cases of varioloid the temperature reaches in this descent the normal point, or even passes below it a little, and remains there from that time or at least very near it, if no complication interferes to cause another rise, which is seldom.”

“This manner of fall characterizes varioloid most strikingly, if this fact be kept in mind, that the defervescence does not begin with the full development of the eruption, but shortly after its appearance, when the spots first begin to elevate themselves above the surface. So soon as this course is observed and the temperature commences to fall with the development of the eruption, a perhaps doubtful case in which it is yet a question whether measles, exanthematic typhus, or smallpox, be present, may be decided upon with great certainty, and smallpox announced.

“It is also perfectly certain that if, in this defervescence, the normal temperature is reached in the shortest period modified smallpox, varioloid, is present, and not variola.”

With the fever that accompanies suppuration the temperature rises again; it may reach  $40^{\circ}$ , but rarely goes above  $39^{\circ}$  C.,  $102.2^{\circ}$  F.; it continues about this point with daily fluctuations of about  $2^{\circ}$  C. until the disease draws to a close.

“In fatal cases the temperature may rise from its moderate range with tolerable rapidity, and death occur at  $42^{\circ}$  C.,  $107.8^{\circ}$  F. and over, although it sometimes occurs during the suppurative stage with only slight ascent.”

Among the fevers, those of malarial origin are particularly interesting to physicians throughout a very large portion of our country. Intermittents are characterized by an extremely rapid rise of temperature, being, in this respect, equalled by but few forms of disease. The ascent begins even before any other symptom, becomes more rapid during the cold stage, reaches its height during the hot stage, and, as might have been expected, falls as rapidly as it rose. This is the only form of malarial fever the course of the temperature in which is known to the author, remittents not occurring in his country. This point is worthy of note by those studying the subject. In this direction may perhaps be found more definite and reliable means of distinction between the typhoid condition of remittent fever—“typho-malarial fever”—and enteric fever. To assist in this study, we will give pretty fully the author's observations of the temperature in the latter disease; it is undoubtedly as important, and as of much interest, as any other, while in no other disease have thermometric observations been so numerous and so long-continued. It is called “abdominal typhus,” but we will use the name by which it is known here,

**TYPHOID FEVER.**—“The course of the temperature in this fever presents a typical regularity which cannot be mistaken. It is almost impossible to escape this conclusion after a comparison of a number of temperature curves of this disease, and it is perhaps the disease by which a justification of the assumption of types can be best proved.”

Yet he admits the frequency of variations—that not a single rule can be laid down to which there will not be found exceptions; yet,

“It cannot be too plainly understood that a type is not to be looked upon as a pattern for the course of all cases, and with which they are to be compared during every moment of their course; much rather may variations occur in every segment, but they are in no single case so numerous or so extravagant, that at least in a larger part of the course the typical peculiarity will not show itself, if only the observations are exact enough, and extend over a considerable period of the disease.”

Then, alluding to the fact that doubtful cases are often met with—cases in which until a post-mortem examination determines, it cannot be said whether the disease is typhoid fever, acute tuberculosis, puerperal or other pyæmia, protracted catarrhal pneumonia, trichiniasis, or some other form of disease, he says:—

“Nor is thermometry able, in all such cases, to solve the diagnostic doubt; but it can decide much that, without it, would remain undecided; it can propound questions which, without it, would scarcely have been thought of; it will often first give rise to the suspicion that the supposed typhoid fever may be another form of disease; it can fix the boundaries of the possibility of answering, and establish a measure of the apparent reliability of the answers.”

In order to justly estimate the value of thermometry in this disease, these points are to be kept in mind:—

“A single observation can never serve to establish the presence of typhoid fever.

“One observation may, however, if made at certain times, negative its presence, or render it highly improbable. Thus, we may with great probability assume—

“That typhoid fever is not present when, during the first day, or on the second morning of the disease, the mercury rises to 40° C. (104 F.);

“That it is not present when, between the fourth and sixth days, the evening temperature of a child or adult up to middle age, does not reach 39.5° C. (103.1° F.);

“That it is not present when, already in the second half of the first week, considerable or increasing evening falls take place.”

The thermometer can only decide the presence of this disease after several days, the observations being made from three to six times daily. But besides this, it shows the intensity of the disease, exhibits irregularities in its course, betrays the presence of complications, indicates the approach of a fatal termination, and establishes the fact of convalescence. Upon all these points it enables us to reach a certainty of judgment to be attained by no other means.

There are, according to the author, two leading types of abdominal fever; in the early and later parts of their course they correspond, but differ in the middle, principally as to duration, the one type running its course in about three weeks, the other extending to four, five, six, or even eight weeks.

“These two variations in the course of the disease correspond tolerably well with the anatomical conditions, as the shorter form shows itself in cases where there is only soft infiltration of the intestinal glands (*plaques molles*); the other, on the contrary, occurs where the infiltration is hard and extensive. In the one, the return to the normal condition is simple, and follows without difficulty by retrograde metamorphosis; in the other, a complicated eliminative process is necessary in order to get rid of the deposit; ulcers follow this process, and their healing may be more or less prolonged.”

In all cases of either type, regular or irregular, certain periods are plainly marked; two of these are especially to be noted, as they can be recognized by the course of the temperature.

"One corresponds to the deposit of the infiltration and exudation; the other to its removal, elimination, and healing of the affected places."

The course of the temperature during the initial stage of typhoid fever is exceedingly regular, and follows the same line whatever may be the character of the following stages. It proceeds in a series of ascending zigzags, during the three or four days which make up this stage, rising from every morning to every evening  $1^{\circ}$  to  $1.5^{\circ}$  C., and falling from evening to morning one-half or three-fourths of a degree, until it reaches about  $40^{\circ}$  C., or  $104^{\circ}$  F. The formula given is as follows:—

M.	E.	M.	E.	M.	E.	M.	E.
37	38	37.5	38.6	38	39.2	38.7	40

Seldom, we are told, does a case of typhoid fever fail to show this course of temperature during the first four or five days, and it is yet more seldom that any other disease presents such a pyrogenetic period; and from this, therefore, a diagnosis may be formed with tolerable certainty. Or, in the words—

"If, in the evening of the second, third, or fourth days the temperature is only approximately normal, the case is not typhoid fever;

"If the temperature is of equal height on the first three evenings, or on only two of them, it is not typhoid fever;

"If the temperature rises during the first two days to  $40^{\circ}$  C., or above, it is probably not typhoid fever;

"If the thermometer shows a fall, even but once, on successive mornings of the first half of the first week, or on successive evenings, typhoid fever may be excluded."

By the end of the first week or beginning of the second, the temperature reaches its maximum, which is generally between  $40^{\circ}$  and  $41.5^{\circ}$  C., or may only range from  $40.2^{\circ}$  to  $40.8^{\circ}$  C., with morning descents of  $.5$  to  $1.5^{\circ}$ .

Passing into the fastigium, the temperature does not afford means for an immediate diagnosis in cases such as frequently come under notice, where the preceding stage has not been observed by the physician, and he can obtain no information concerning it. Many cases are enumerated in which the diagnosis may be difficult; the thermometer will not clear up all of them, yet in many it is of great service. Thus, typhoid fever may be excluded—

"In young adults, when, during the fastigium, severe symptoms being present, the evening temperature remains under  $39.6^{\circ}$  C. ( $103.3^{\circ}$  F.);

"In all cases in which, during severe symptoms, at any time of the day, the temperature reaches to normal point without marked cause, such as profuse hemorrhage, perforation, etc.; this it certainly does in severe or pernicious intermittents, much resembling typhoid fever, frequently does in pæmia, and sometimes does in pneumonia, and acute tuberculosis."

On the other hand, typhoid fever may be positively assumed in a case of moderate intensity—

"When in a young person, or one not past middle age, previously healthy, after an illness of from five days to a week and a half, the temperature ranges from  $39.7^{\circ}$  to  $40.5^{\circ}$  C., or a little above, in the evenings, to a point  $\frac{3}{4}$ – $1\frac{1}{2}^{\circ}$  C. below in the mornings, without any other cause being discoverable to account for the fever, and without extreme neglect and want having immediately preceded."

By about the middle of the second week, mild cases begin to mend; the thermometer marks the improvement by a deeper morning fall than usual, the descent contrasting markedly with that of the day before; the depth of these morning remissions increases day by day; while in the afternoon there is a rise, perhaps, even carried to the same point for a week; more generally, however, each ascent is something less than that of the day before, and a zigzag downward line is marked to the normal range.

On the contrary, "A severe course may be looked for with great certainty when in the second week, the morning temperatures maintain themselves above  $39.5^{\circ}$  C., and the evening reach up to or above  $40.5^{\circ}$ , when the daily exacerbations set in early or continue beyond midnight, but especially when no abatement appears about the middle of the second week, or at latest by the twelfth day."

"It is almost a certain sign of a severe case when the temperature reaches  $40^{\circ}$  in the mornings, and goes above  $41^{\circ}$  C. ( $105.8^{\circ}$  F.), and especially when towards the end of the second week an increasing ascent is observed."

"Most unfavourable of all is it, however, when with such a course causeless variations appear, even when they indicate an abatement, if it does not correspond to the usual course of typhoid fever."

The course followed by severe cases is, of course, varied and influenced by many circumstances, such as complicating local inflammations, hemorrhages, etc.

As the disease draws towards a close, the thermometer becomes valuable as an aid to prognosis.

"The danger is very considerable when the temperature reaches  $41.2^{\circ}$  C., ( $106.16^{\circ}$  F.); at best, only a very slow recovery is to be expected. At  $41.4^{\circ}$  C. ( $106.5^{\circ}$  F.), the fatal cases are double to recoveries; at  $41.5^{\circ}$  ( $106.7^{\circ}$  F.) recovery is a rarity. Fielder gives  $41.75^{\circ}$  C. ( $107.06^{\circ}$  F.) as the highest temperature which a patient can reach and still recover."

"All great irregularities of the temperature occasion a gloomy prognosis; at least farther complications may be relied upon when they are present."

"If the case ends fatally it is very seldom that a simple ascent of the temperature occurs, much more frequently it shows an inclination to descend, with which, however, the frequency of the pulse does not correspond. Violent irregularities frequently show themselves, and run on into the agony."

\* \* \* "The pre-agonic period mostly begins with deceitful descents of the temperature, which, nevertheless, not only contrast with the other symptoms, but also manifest a certain irregularity."

The various steps by which the temperature descends towards health, whether by crises or lysis, are then traced.

"Full convalescence after typhoid fever is only to be assumed when the thermometer shows an entire absence of fever in the evenings. The beginning of convalescence is, therefore, only to be established by thermometry, and it can be only looked upon as assured, when the low temperature is seen for, at least, two successive days."

"Frequently the temperature falls somewhat lower than the normal point, reaching, in the morning,  $36^{\circ}$  or  $36.5^{\circ}$  C. ( $97.5^{\circ}$  F.), not reaching  $37^{\circ}$  C. in the evening, by which is shown rather the certainty of convalescence than anything unfavourable."

The irregularities of the course of the temperature in this disease when it occurs in children, in persons over forty, and some other classes are then detailed. To this follows the statement of the influence of some therapeutic measures which are so important as to need no apology for their introduction in full:—

"An energetic treatment with *cold water*, by enveloping the patient in cold

wet sheets, by lukewarm or cool baths, can modify the course of the temperature, depressing the exacerbations, shortening the course, yet rendering it irregular."

"The early internal administration of *calomel* in not too small doses (30 centigrammes, about half a grain), less surely the administration of other laxatives—influences the course of the temperature, causing, immediately, a stronger remission than is accustomed to take place spontaneously at this period. After this descent, nevertheless, it ascends again, but generally not to the former height, and in a considerable number of cases it happens that after a few days of moderated range defervescence follows in the customary remitting manner, sometimes with rapid course, and convalescence is reached sooner than on the average in patients when the disease is left to itself.

"If the *calomel* be given too early, *i.e.*, in the middle of the first week, the remission also occurs, but the following ascent is sometimes higher (if not in the majority of cases), and may surpass the range before the administration. It appears that by so early administration of *calomel* the maximum height is delayed; at least in such cases the maximum is seen at the seventh and eighth days, and even later, and in general the efficacy of the remedy is doubtful if, after it is given, the temperature reaches above  $40.5^{\circ}$  ( $104.9^{\circ}$  F.).

"If the *calomel* be not given until the second week or later, strong remissions are immediately seen, but an effect upon the whole course is only exceptionally shown, and slighter and more seldom in proportion to the advanced stage of the disease at which the medicine is administered."

"*Digitalis*, administered in quantities of from two to four grammes (3ss-3j) during from three to five days of a severe typhoid fever, causes, in numerous instances, a slight moderation of the temperature, then a deep descent which, during the period of exacerbation, may amount to  $2^{\circ}$  C. or more. This fall, however, does not generally last more than about a day beyond the administration of the medicine. The temperature rises again, but in favourably influenced cases does not reach the former height, and remains of moderate degree with a simultaneously depressed pulse; defervescence takes place as usual while the pulse recovers itself only after about fourteen days from the administration of the medicine, and when convalescence has already advanced."

"*Quinia*, in large doses—1.2 to 1.8 grammes in three doses during a few hours—exerts a powerful temperature-depressing effect in typhoid fever. The first observations were made by Wachsmuth. He gave .6 gramme (about gr. ix) three times at intervals of three hours, and saw a rapid fall of the temperature, from  $40.25^{\circ}$  to  $36.75^{\circ}$  C. The temperature rose again after two days in the evenings to  $42^{\circ}$ , but in the remissions reached the normal point; defervescence began and was rapidly completed. In one of my cases 1.2 gramme (nearly 3j) of quinia was administered between 5 and 12 o'clock P. M. with a temperature of  $41^{\circ}$  C.; in the night, with symptoms of intoxication, a rapid fall of the temperature took place, on the following morning the mercury stood at only  $37.1^{\circ}$ , and at noon at  $36.25^{\circ}$ ; in the evening it ascended again to  $40.1^{\circ}$  C. Another exhibition of a gramme divided over forty-eight hours depressed the temperature again to  $36.9^{\circ}$ , from which point it again rose, but from thence on the disease was mild. Moderate doses of quinia (.6 to .8 gramme in twenty-four hours) also moderate the temperature of typhoid fever, but are not reliable."

These facts are as interesting as they are striking. They may not add greatly to our knowledge of the medicines, but they certainly increase our confidence in their therapeutic value, and enable us to give rational explanation of their efficacy. Nor does the testimony here given in regard to these articles stand alone; in this Journal, for July, 1864,<sup>1</sup> may be found the high estimate placed upon *calomel* as a laxative in typhoid fever, by one of the author's countrymen, whose reputation as a clinical observer, teacher, and author is second to none. Also in the very excellent and practical article upon clinical thermometry in the *Nouveau Dictionnaire*

<sup>1</sup> Review of Lebert's *Handbuch der Practischen Medicin*, p. 153.



(art. Chaleur) by Hirtz, the most extravagant terms are used in regard to the value of digitalis and quinia as febrifuges. The former is termed "precious above all others by the intensity and the precision of its action, by the duration of its effects and the range of its indications. It may be termed the specific of inflammatory fever." Of the latter it is said, "its action is not limited to its admirable specific power over paludial diseases, but extends, in less degree it is true, to all the other pyrexias," and "it has *conquered* for itself an important place in the treatment of febrile articular rheumatism."

It is not for lack of subjects of interest that we do not extend still further our notice of Dr. Wunderlich's complete and admirable treatise. We have presented his views and his facts sufficiently to teach the mode and enable a judgment to be formed of the value of clinical thermometry, and in doing so feel assured that to those who have never before investigated it, we have opened a subject of wonderful interest and great importance, as we trust we have been of service to those who have already made it a study.

J. C. R.

ART. XXII.—*Report on the Cholera Epidemic of 1866, in England. Supplement to the Twenty-Ninth Annual Report of the Registrar-General of Births, Deaths, and Marriages, in England.* Presented to both Houses of Parliament by command of Her Majesty. 8vo. pp. 321. London, 1868.

THIS is one of the "Blue Books" published by the British government, and embraces a Report on the Cholera Epidemic of 1866, by Dr. Wm. Farr, together with an Appendix containing tables and notes, which present a view of the topographical distribution of the disease, and facts supplied by health officers in the towns, and other medical men in the provinces. The Report by Dr. Farr occupies 90 pages, the remaining 231 pages being devoted to the Appendix.

Dr. Farr states, as the important discovery resulting from the study of this epidemic in its first visitation in 1831 and 1832, that the disease in its worst forms was preceded by diarrhœa. And, quoting his language, "to arrest this diarrhœa is to prevent cholera, as to extinguish a spark is to prevent a conflagration." Truly, this was an important discovery; and, although a theory of elimination has recently been broached and found some advocates; a theory which, if generally accepted, would, for a time, do away with the practical advantage of the discovery, good sense and clinical facts have happily prevailed. It is terrible to think of the sacrifice of life which, there is reason to believe, must have followed the practice based on this theory.

A sequel of the discovery just referred to, was the system of house-to-house visitation, the effect of which in limiting the fatality from the epidemic, was demonstrated in 1849 and 1854. With a knowledge of the importance of this system, added to the discovery of the practicability of preventing cholera by an arrest of the premonitory diarrhœa, practical medicine had accomplished much, albeit no progress had been made in ascertaining the causation of the disease.

Endeavours to discover the special cause of the disease and the means

of its diffusion have been, however, by no means wanting. In 1849, Snow advanced the doctrine that the disease was produced exclusively by a virus contained in the choleraic dejections, and that this virus was distributed to those not brought into direct contact with patients chiefly by means of water supplies. He brought forward facts in support of this doctrine. In 1854, the investigations of a scientific committee, composed of medical men of eminence in London, were directed to the water with which the city was supplied. It was found that nearly all the Thames waters in use were foul, the water companies obtaining their supplies from the tidal part of the river, which had for some years been the receptacle of the sewers in communication with a large proportion of the water closets of the city. Dr. Farr considers that the Report of the committee "proved conclusively the extensive influence of water as a medium for the diffusion of the disease in its fatal forms." The Report by Dr. Farr, which we have now under review, together with the matters embraced in the appendix, are chiefly interesting as embodying evidence in behalf of the etiological opinion expressed in the sentence just quoted.

Dr. Farr considers the different theories of cholera under four heads, to wit: 1st, the zymotic theory; 2d, the mathematical theory; 3d, the air, water, contact theories; and 4th, the theory of spontaneous generation. Of these theories, the one called mathematical appears to be essentially the zymotic theory. The author of the name "mathematical theory," Pacini, undertakes to prove zymosis by algebraic demonstration. The zymotic theory involves a doctrine of the etiology and pathology; the other theories relate to the diffusion of the disease. Dr. Farr adopts, in the first place, the theory of zymosis, a name which many years ago was introduced by him. He also adopts the water theory of the diffusion of the disease, and the theory of spontaneous generation. Some of our readers may not be familiar with the nature and scope of these theories. Let us, therefore, endeavour to give an exposition of them by quotations from the Report before us, and we shall offer some comments as regards their application to the causation, pathology, and diffusion of cholera.

With regard to the name zymosis, the author of the report states that "the analogy between the phenomena of zymotic diseases and the phenomena of fermentation, but not the identity, suggested the name of that important class of maladies." The theory which the name denotes, considering the latter as comprehending the phenomena of catalysis, is doubtless the most rational with our present knowledge, in its application to many diseases, cholera included. It is conveniently comprehensive and lacking in precision. It is too late in the day to enter a protest, but we could have wished that the name had not been incorporated in nosology, on the ground that all names which denote theoretical views had much better be avoided in the nomenclature of diseases. Rational as is the theory of zymosis with our present knowledge, it may hereafter be proved that the term zymotic is a misnomer. It is safest to designate diseases by names which do not commit the nosologist to theoretical views. Dr. Farr, however, is of the opinion that the analogy between the phenomena of zymotic diseases and the phenomena of fermentations has been rendered more striking by the researches of Pasteur. He expresses the belief that "Pasteur has now, in a series of remarkable researches, proved that ferments are organized bodies, differing in character, and living usually in the absence of free oxygen, while they have the power of appropriating or detaching this element from its feebler chemical combinations. Thus the

ferment of butyric acid is a kind of vibrion." Again, "Natural Science has advanced so far then as to render it almost certain that the fermentations are actions of the simplest organic forms; and following in its wake we are justified in accepting the hypothesis that the zymotic principles of disease are specific molecules which have the power of reproducing themselves in successive generations, growing and decaying by laws like the higher forms of life, not only under the same but also under modified conditions."

The zymotic principle, supposed to constitute the special cause of cholera, which Dr. Farr proposes to call *zyme* (he also proposes to call the special cholera-product *cholrine*), is thus a specific molecule, living, growing, reproducing itself, and decaying. Now, what evidence of this afforded by direct observation is cited? Dr. Hassall, in 1854, discovered myriads of vibrions in twenty-five samples of the choleraic evacuations. These were found as early as two hours after death. He (Dr. Hassall) concludes that they are constantly present, and that they are developed during life in the small intestine. But it is stated, "as vibrions are found in impure water and wherever putrefaction is going on in the absence of acids, Hassall did not venture to regard them as the cause of cholera. The tendency, in fact, with this excellent microscopical writer, was to regard vibrions and other ferments as results and not as causes of putrefaction." Strange as it may seem, this is the only direct evidence which Dr. Farr cites, and he at once proceeds to calculate the rapidity with which the vibrions, constituting the cholera-ferment, may be supposed to multiply and become diffused in water. We cannot forbear quoting the concluding paragraphs of the section devoted to the zymotic theory of cholera, in which, as will be seen, he proposes to inflict, in addition to *zyme* and *cholrine*, other names, to wit, *biads* and *cholrads*.

We shall make no comments, leaving the reader to judge without any hints from us, of the lucidness and satisfactoriness of the author's exposition. The paragraphs are as follows:—

"To sum up the zymotic theory. It is now held by naturalists that each organ of the body has its proper life; and that it consists of minute centres of action, which have been called cells, globules, organic units, germs, granules, and other names. The cells like the supposed vesicles of the clouds are now shown to be solids, and Beale proposes to call them 'germinal matter,' which is perhaps a description rather than a name. 'Monad' would serve to designate these living particles, but as it, as well as the other names proposed, have been already appropriated, these units of force and life may be designated *biads*.<sup>1</sup> Nearly alike under the microscope, *biads* differ infinitely in power and variety; for instance the brain-cells of man in an early stage of development resemble the pus-globules of ordinary inflammation.<sup>2</sup> 'Masses which could not be distinguished from one another [even by Dr. Beale], manifest the most remarkable differences in power.' \* \* \* "By chemical analysis every kind of germinal matter (*biad*) yields one substance resembling fibrin, another allied to albumen, fatty matter, salts, and water.' Of these *biads* all bodies are built up.

"It is only with particular kinds of these *biads*, then, that we have to do in *zymosis*; and, to give definite form to the theory, while *vaccine* lymph may be briefly called *vaccinine*, the granules of Chaveau may be named *vaccinads*; while those of *varioline* (smallpox lymph) are named *variolads*; those of *syphiline*, *syphilads*, and those of *cholrine*, *cholrads*—the cholera-genic molecules' of Pacini.

<sup>1</sup> *Bia* force, *biog* life.

<sup>2</sup> Beale on the Microscope, p. 150, and plate xx.

"It is life in this low form, where it is developed in isolated particles at war with those which constitute men, that generates zymotic diseases. An epidemic is the war of a conquering host of innumerable particles of life. It is therefore subject to the laws of growth and decay, both in the individual man and in communities."

Passing to the "theory of spontaneous generation," the author opens up this topic with the following statement: "Plagues are propagated by a leaven (*zima*), and the leaven itself consists of specific forms of living matter. It involves all the difficulties of the origin of species, and awaits the same solution." We do not propose to enter into any discussion of the vexed question whether inorganic matter can, in the language of the author, "spontaneously assume the forms and exercise the functions of the lowest forms of life." He adopts the "theory of spontaneous generation" in the following terms: "With regard to all the plagues—and to Asiatic cholera among them—we are necessarily driven back to the hypothesis of spontaneous development. There was a date when the Asiatic cholera leaven (*cholera*) did not exist; it has therefore been developed out of prior-organized substance. Like species of the animal kingdom, plagues lie hidden in the strata of past history; they live, they flourish, they perish like organic forms, because they are in their essence successive generations of organic forms at enmity with the corpuscles of which the human race consists."

We cannot undertake to give a synopsis of the "mathematical theory," which, as stated already, is the zymotic theory; and we come, lastly, to the theories which account for the diffusion of cholera by air, water, and contact. Dr. Farr argues here, as elsewhere, on the basis "that Asiatic cholera is propagated by the cholera discharge." "No other basis," as he says, "deserves much attention." Assuming this as the basis of argument, he concludes that "the population of London probably inhaled a few cholera corpuscles floating in the open air, and more rising from polluted waters and from the sewers; but the quantity thus taken from the air would be insignificant in its effects in comparison with the quantities imbibed through the waters of the rivers, or of ponds, into which cholera dejections, either in the diarrhœal stage or the stage of collapse, had found their way and been mingled with sewage by the churning tides." He adds: "No facts can be cited to prove that cholera is propagated by the breath of cholera patients." "But there are many facts in favour of the opinion that the disease spreads from person to person, not by contact with the cuticle, but by contact of the colourless, inodorous flux with the mucous membrane. Dirty people in crowded houses take the disease from a first case in unusual numbers; and the soiled linen communicates the disease."

Recapitulating the series of theories in respect of the causation, pathology, and diffusion of cholera, which Dr. Farr assumes as established, they are: 1st, the existence of a specific matter which he calls *cholrine*; 2d, in its morbid action this matter is analogous to a ferment, or, as he proposes to call it, a *zyme*; 3d, this cholera producing matter, or, as he often terms it, *stuff*, is in the form of living molecules, which he proposes to call generically *biads*, and specifically *cholrads*; 4th, the production of this matter, stuff, cholrine, or the biads and cholrads, takes place in the alimentary canal; 5th, the cholera-producing molecules may be spontaneously generated; 6th, passing from the intestinal tube in the excretions, they are diffused in water especially, but, to some extent, in the atmos-

pheric air, and in this way the disease is diffused, the diffusion also sometimes being due to the direct contact of the choleraic evacuations.

The reader must not expect to find in Dr. Farr's report an effort to prove these six theories. It is taken for granted that they are true; and the object, as regards the cholera epidemic in London of 1866, is to show their application chiefly to the diffusion of the disease by means of water containing the efficient causative agent. We propose to give a synopsis of the data on which the author rests the conviction that the epidemic of 1866 in London was due to polluted water. But before doing this we will offer some remarks on the collection of theories just enumerated.

Dr. Farr is not responsible for the creation of these theories; the peculiar terms which he uses constitute all that is original with him. We have no intention of discussing the merits of the theories; this would be an undertaking of no small magnitude, and we confess our inability to do it, if it were desirable. But we will ask if any one of these theories rests upon the evidence of direct observation? We suppose no one will pretend that an affirmative answer to this question is warrantable. No one has yet discovered matter within or without the body which has been proven to be the efficient agent in the production of cholera. The evidence, therefore, of all the theories is circumstantial or inferential.

It is hardly necessary to remind the medical reader of the important practical consequences of assuming these theories to be established. They involve the doctrine of contagion. If these theories be true, cholera is a highly contagious disease. Referring the source of the contagious virus to the intestinal canal, the spread of the disease is to be prevented by either destroying this virus in the choleraic evacuations, or guarding effectually against direct contact with it and its diffusion in air and water. To these ends all efforts for the arrest of an epidemic of cholera are to be directed, and, if efforts thereto are successful, the epidemic must be arrested. As regards the theories, a vital question is the contagiousness of cholera. They fall to the ground, if cholera be not contagious. Now, in the absence of proof afforded by direct observation of the theories which hinge upon the production within the intestinal canal of a choleraic virus, we claim that it is a logical procedure to test their correctness by endeavouring to settle the question, whether cholera be or be not contagious? Can it be shown that cholera is not contagious, then the special morbid agent which causes the disease is not contained in the choleraic dejections, and the disease is not due to the introduction into the body of cholrine, zyme, cholera molecules, or cholrads, which these dejections have supplied to air and water. Let the argument be clearly understood: if a virus, in any form, be demonstrated, the contagiousness of the disease follows of course; and it is important to determine, if possible, whether this virus be in the form of living molecules, and, if so, the laws of their multiplication, diffusion, etc. But if a virus be not demonstrable, the evidence against the contagiousness of the disease is also evidence against the existence of a virus in any form. Simple as this proposition appears to be, it seems to have been of late overlooked by not a few.

How is the question of the contagiousness of cholera to be settled? In the absence of proof afforded by inoculation, and no such proof exists, the question clearly is to be settled by bringing to bear upon it the evidence relied upon for establishing, on the one hand, the contagiousness, or, on the other hand, the non-contagiousness of other diseases. The prevailing opinion in the medical profession, it must be confessed, does not

possess great weight. Probably at this moment many, and perhaps the majority of, physicians believe that cholera is communicable by means of a virus contained in the choleraic dejections; yet ten years ago the doctrine of the contagiousness of this disease had very few advocates. Similar fluctuations have occurred with respect to the communicability of other diseases; for example, yellow fever. Any one, therefore, who aims to meet the question fairly, must rise above the medical opinions which happen at the time to be in the ascendant.

We have not entered upon this train of remarks as preliminary to discussing here the question of the contagiousness of cholera. We have considered this question elsewhere. We shall content ourselves with expressing the conviction that a fair and full consideration of facts bearing on this question—relating to the occurrence of cases at the commencement of an epidemic at widely separated localities, the rapid succession of cases, the proportion of those attacked who are in communication with or proximity to cholera patients, as compared with those attacked who have no relations with cholera patients, the limited duration of cholera epidemics, etc.—must lead to the conclusion that cholera is not a contagious disease. In Dr. Farr's Report the only evidence in behalf of the doctrine of contagion is that which relates to the diffusion of the disease by means of the water supplied to certain districts in which cholera prevailed. We will now proceed to an analysis of that part of the Report which relates to the origin and cause of the epidemic in London in 1866.

The rise and progress of this epidemic was as follows: On Wednesday, July 11th, five deaths by cholera occurred; the number of deaths on the three successive days were 11, 20, and 15. On Saturday, July 21st, the number was 105. On Tuesday, July 31st, the deaths were 191, and on the following day 188. From this date the epidemic declined. The total number of deaths during successive five weeks were 11, 63, 481, 1097, and 1178. It was early observed that the larger number of deaths were in certain sub-districts supplied by one of the London water companies—namely, the East London Water Company. In these sub-districts the deaths for five successive weeks were 1, 38, 420, 955, and 982. In the rest of London, supplied with water by screw water companies, the deaths in these five weeks were 10, 25, 61, 142, and 196.

In seeking to discover the cause of the greater mortality in the parts of the city supplied by the East London Company, investigations were directed to the water supplied by this company. It appears that the water companies are required by law to store the water in covered reservoirs, and to filter it before its distribution. These requirements had been fully complied with by all the companies except the East London Company. It was ascertained that on three occasions, in 1866, water was taken from open reservoirs which had been thrown out of use, and was distributed without filtration. One of these occasions was in March, four months before the epidemic; the second was in June, several weeks before the epidemic; and the third was early in July, shortly before the epidemic. On each occasion the testimony was, that supplies were taken from the open reservoirs only for two hours. The predominance of deaths from cholera in the parts supplied by the East London Company is accounted for by the facts just stated. Several cases of cholera and choleraic diarrhoea had occurred, it is stated, over London in May and June. These cases, as Dr. Farr thinks, "sufficed to pour into the sewers and waters millions of zymotic molecules;" and the first four deaths which occurred

on Wednesday, July 11th, are supposed to be the result of the introduction of some of these molecules early in the week.

Dr. Farr, with his fondness for odd names, calls the districts supplied by different water companies "water-fields." The occurrence of 2396 deaths in the East London water-field, he accounts for as just stated, namely, by the opening of a sluice, by which water from an uncovered reservoir, and unfiltered, was for two hours mingled with filtered water in covered reservoirs. But how are 434 deaths in the rest of London, during the same period, in seven other water-fields, to be accounted for? This, to quote his own words, "is explained by the diffusion of the cholera-stuff through personal intercourse, sewers, and the slight contamination of the waters either of wells or of the Thames, and of the sea, after filtration of the water companies."

Again, the fact that in particular streets within the water-field of the East London Company, no deaths from cholera occurred, is "at once accounted for on the supposition, quite compatible with the principle of distribution in water, that fatal doses of cholera matter were not distributed in that street, or if distributed, did not come in contact with the mucous membranes, or if they did come in contact, fell on them when they are insusceptible, or, finally, were extinguished by early treatment before they could prove fatal."

To our apprehension, the conclusions which Dr. Farr enumerates with so much positiveness, respecting the origin and cause of cholera, in London, in 1866, rest upon a very slender foundation. That this disease prevails, especially in certain localities, which it pleases Dr. Farr to call cholera-fields, is a well-known fact observed in every epidemic. The preference for particular situations has been manifested often enough when the explanation given by Dr. Farr of the prevalence in the East London water-field could not be applied, and, indeed, when no explanation involving communicability could be sustained. At the most, that the disorder is diffused by means of the supplies of water is a conjecture; and admitting a causative agency in water, that this agency is due to living molecules, capable of reproduction, and that they are derived from the choleraic dejections, are, as we have seen, theories which have no solid basis. Dr. Farr, however, assumes that they are not theories, but established truths; and he takes them as his point of departure in seeking the origin and cause of the disease. The account which he gives of his investigations in the early part of the epidemic of 1866, shows that he at once jumped at the conviction of the special cause being in the water supplies. His mind was fully committed to this preformed conviction, and he labours to support it with the zeal and ardor which an advocate exerts in behalf of a cause in which he has enlisted. While we would accord to the labours and opinions of Dr. Farr all that respectful consideration to which they are justly entitled, we must say that, in our humble judgment, he fails to make out even a plausible case in his explanation of the origin and cause of the cholera epidemic in London in 1866.

As another illustration of the diffusion of the disease by means of water holding the virus derived from the intestinal excreta, Dr. Farr cites, "the parallel case of Newcastle upon Tyne." The epidemic here which he describes occurred in 1853. It began about the first of September. On the 15th of September the deaths in twenty-four hours were 140. A suspicion arising that the Tyne water supply was impure, from being fouled with sewage, on the 15th of September, the distribution of this water was

stopped, and the supply obtained from another stream. For the three following days the deaths were 102, 89, 90. For three days from September 23d, to 25th (the deaths in the intermediate four days not being given) the mortality was 75, 63, 81. From September 26th to 28th, the deaths were 43, 46, 27. September 29th, there were 23 deaths, and September 30th, 16 deaths. From this date, it is stated, the deaths continued to diminish, and the last death occurred on November 23d. Now, we submit that this is a fair example of the rise, progress, and decline of an epidemic of cholera. It reached its culminating point in 15 days; it then gradually declined for 15 days, and the disease disappeared in about three months. But granting that the Tyne water had a morbid agency, there is no evidence that this agency was of a specific nature. A specific agency was not attributed to it at the time, but it was supposed that simply as impure water it may have acted as an auxiliary cause; and this is certainly not improbable.

As an instance of Dr. Farr's reasoning from the assumption that cholera must be due to a virus finding its way into drinking water, we quote the following, which is one of two illustrations given of the "Indirect diffusion of cholera by water:"—

"The Broad Street outbreak is an illustration. The first deaths were traced to the pump well, which was in communication with the house No. 40, where an infant died of diarrhoea and sickness (probably cholera) immediately before the outbreak. How the cholera matter first reached the child or the street could not be discovered, but it was probably conveyed thither by the water of the Grand Junction Company, which, containing ammonia and very likely chlorine in comparatively weak solution at that time, was evidently of worse quality than it was in 1849; for Hammersmith and some of the other sub-districts suffered severely in 1854. Thus we can conceive that the introduction of a few germs into one house of a district, may, through water, be the cause, as in this instance, of more than 616 deaths."

Is it possible for a statement of facts bearing on the causation of a disease to be looser and more unsatisfactory than this!

We should be sorry if the tenor of our remarks should lead to the supposition that we undervalue the importance of a supply of pure water as one of the sanitary measures for the prevention of cholera and other diseases. That impure water, at certain times and places, may be one of the factors in cholera epidemics is probable. What we object to, is the assumption that water has been proved to contain the special cause which produces cholera. The assumption rests upon conjecture. We admit that it is a higher grade of speculation than the absurdities of Pettenkofer; but, like the latter, it has no solid basis of support. We object to accepting the doctrine of a virus in any form, because this doctrine is not substantiated by positive facts, and it is opposed by facts which establish the non-communicability of cholera as conclusively as it is possible to prove a negation in etiology. It is desirable to discover the special cause of cholera, its nature, its origin, the mode or modes of its diffusion. Theories and speculations are admissible; but if accepted as truths, they are likely to embarrass the progress of knowledge by constituting errors which are to be unlearned.

Practically, the virus and water theory of cholera may do harm by limiting efforts for the prevention and arrest of epidemics, to measures having exclusive reference to the choleraic discharges and the water supply. Take, as an illustration, the city of New York which is supplied by water from a source fifty miles distant, and where the sewage is discharged into rivers the waters of which are not drinkable. Cholera prevailed, to a certain



extent, in New York in 1866. It prevailed, as stated by the Sanitary Superintendent, Dr. Edward B. Dalton, at first "in localities widely separated, but as the season advanced and the cases became more frequent, they occurred, not successively in the same localities, but, with comparatively few exceptions, within the limits of various circumscribed localities, which latter were themselves widely separate from each other, the result being, that individual cases were proximate, while the groups were widely separated." The Board of Health wisely determined to resort to efficient measures of disinfection, with the hope of destroying the special cause without assuming anything as to its nature, or whether in its origin it be intrinsic or extrinsic. Every house in which a case of cholera occurred was promptly disinfected. It is not certain that these efficient measures were the means of restricting the prevalence of the epidemic, but there is much reason for conjecturing that they accomplished this result. Certain it is, that the water supply had nothing to do with the existence of the epidemic, and that this epidemic exemplified the facts which go to show that the disease is not communicable.

Finally, Dr. Farr's Report, with the appendix, is an elaborate and exhaustive exposition of the evidence to be adduced in support of the diffusion of cholera by means of water supplies; and, if we do not err, its value, in this point of view, consists in the conclusion that this explanation of the causation of the disease is unsatisfactory. A. F.

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ART. XXIII.—*Kidney Diseases, Urinary Deposits, and Calculous Disorders; their Nature and Treatment.* Containing Seventy Plates and Tables for the Clinical Examination of Urine. By LIONEL S. BEALE, M. B., F. R. S., F. R. C. P.; Physician to King's College Hospital; Professor of Physiology and General and Morbid Anatomy in, and Honorary Fellow of, King's College, London. Third Edition, much enlarged. 8vo. pp. 472. Philadelphia: Lindsay and Blakiston, 1869.

THIS is a very elaborate treatise. The author has, in all parts, proceeded upon the principle that no scientific scrutiny and investigation, however minute, can be really unnecessary or impracticable, and that such work must ultimately lead to great results in improved therapeutic methods. In the chemical and analytical sections Dr. Beale has had the important aid of Professor Bloxam and Mr. Sutton, and every process of examination which has stood the test of experience up to the present time, is stated in a concise and available form. The clinical remarks and observations on the treatment of urinary diseases have been very much extended, and the chapter on surgical operations derives increased certainty and value from the revision of Mr. John Wood. Many of the alterations and additions to the text have to do with the author's recent laborious researches, and contain such conclusions as naturally follow from the application of his now well-known views upon minute anatomy and pathology to the affections of special organs. The usefulness of the book has been increased by nearly one hundred new drawings, and as many more have been re-engraved in order to render them more truthful representations of nature. As in other editions, scales have been appended to the illustrations, by the

aid of which every object represented can be accurately measured without difficulty. The occasional repetition of plates published elsewhere may well be permitted to a writer who has so patiently persevered in accumulating faithful delineations of actual appearances and in rigidly excluding all diagrammatic illustrations in matters of fact. They who complain of a dogmatic tone in some of his descriptions might properly reserve their judgment until they have produced copies of equal merit from preparations of the same healthy and diseased tissues; and the expressions too positive for the approval of exact science, into which he is now and then betrayed while evolving some favourite theory, are, perhaps, fewer than similar ones in the writings of those who differ from him.

Part I. is devoted to the consideration of 1st, the Anatomy and physiology of the kidney; 2d. Its structural changes; and 3d. The treatment of its diseases. From the outset the position is strongly maintained, that the kidney is not a mere filter only, but also an apparatus in which the oxidation of certain matters about to be got rid of, is effected, and imperfectly soluble substances are converted into readily soluble and highly diffusible compounds. The views of Bowman in relation to the Malpighian bodies and their connections are adhered to, and the objections to these views are shown to be founded on error chiefly due to faulty methods of preparing specimens for examination. The idea originally promulgated by Henle—and which, too hastily supported by other writers, has caused so much unnecessary discussion—of there being two distinct systems of tubes in the kidney, the one open and the other closed, is entirely rejected, and appears to have no other basis than the familiar fact that many of the convoluted tubes dip down for some distance among the straight tubes of the pyramids, forming loops, the convexities of which are directed toward the apex of the pyramid.

Dr. Beale's observations on the epithelium of the renal tubules bear directly upon his explanation of the secreting function. He has never seen the outline of the secreting cells so distinctly as it is usually figured in anatomical works, or, indeed, in his own figure. He is compelled to dissent from the descriptions generally given, both of the kidney and liver epithelium, inasmuch as the appearance of a cell wall can only be seen under certain circumstances; and in the normal cell there is undoubtedly no such structure. Spherical masses of germinal matter ("nuclei") are imbedded in a granular ("formed") material which they have produced, and by which they are separated from each other at nearly equal distances. The fluid which exudes from the Malpighian tufts (these being *devoid of epithelium*) passes down the tube, holding in solution some substances *separated* from the blood, but particularly a *large amount of oxygen*, and bathes in its progress the surface of the formed material. From the blood of the intertubular network the germinal matter takes up certain excrementitious constituents, and thus new germinal matter is formed. But the mass does not increase in size, because, at the same time, a portion of the germinal matter already produced undergoes conversion into formed material; nor does this latter accumulate because it is being constantly disintegrated by the action of water and oxygen, and resolved into urinary elements.

This view requires only a change of phraseology when we speak of desquamative nephritis, but it enables us better to understand the essential processes of that morbid condition. If each "nucleus" is not simply the comparatively inert centre of a "cell" whose sole office is to *filter* effete material from the blood, but germinal matter in a state of great activity,

which constructs the substance around it from its pabulum, *i. e.*, the excrementitious matters in the circulation, presenting these in an altered form capable of being oxidized by the oxygen of the tubule-fluid, then the rapid multiplication of this germinal matter, and the excessive enlargement of this formed material when the blood contains a correspondingly abnormal amount of the pabulum, become much more intelligible. It gives us too a clearer explanation of the formation of casts and the production of albumen. It is doubtful whether the escape of albumen, and its presence in the urine is in all cases to be attributed merely to increased pressure upon the capillary walls and the transudation of serum. The albumen of urine often differs chemically from that of blood. May not albumen of a particular kind be actually *formed* in the kidney, just as mucus is *formed* upon the surface of mucous membranes by the agency of masses of germinal matter which are situated there? This *formative* function, attributed by Dr. Beale to the kidneys in a former edition of his work, and now specially insisted upon, has been almost demonstrated by the experiments of Oppler, Perls, and Zalesky. If the renal vein be tied, more urea is found in the blood than if the kidneys be removed. Perls has proved that no urea is to be detected in the tissues of animals if the kidneys are extirpated; but, on the other hand, if the ureters be tied, the accumulation is very considerable. The observations of Zalesky on serpents are still more to the point. When the kidneys were removed no uric acid or urates could be detected in any part of the body, although the animals lived three weeks; while, if the ureters were tied, every tissue contained urates in large quantity. Traces of urea, uric acid, and other special urinary constituents may be found in the blood, but *by far the largest proportion is produced in the kidneys themselves*. This harmonizes with the established fact that in many cases of severe "uræmia" no urea is to be detected in the blood; and, also, with the generally received opinion that this peculiar toxæmic state results from the accumulation of very many substances connected with destructive assimilation. When a large quantity of urea is found in the blood the formation of this substance has probably been going on actively in the kidney and has been followed by reabsorption.

Dr. Beale's delicate microscopic dissections have thrown much light on the distribution of nerves to the renal vessels and secreting structure. By observations upon the kidney of the newt, and of the mammal in various stages of its development, he has demonstrated the supply of nerve fibres to the convoluted portions of the uriniferous tubes, to the intertubular capillaries, and to the capillaries of the Malpighian bodies; also in great numbers to the minute arteries and veins; and in the arteries he has detected the unstriped muscular cells up to the points where they enter the Malpighian tufts. These nerve fibres are all connected with ganglia cells, from each of which two or more fine fibres proceed in different directions, establishing connection between the cells of these and other ganglia and peripheral parts. When the filaments reach the wall of a uriniferous tubule they divide and subdivide freely, giving off still finer branches which ramify in the connective tissue entering into the so-called "basement membrane."

The ganglia above referred to are without doubt special nerve ganglia of the kidney, and bear the same relation to this organ that the little ganglia of the cardiac nerves bear to the heart. Dr. Beale regards the fibres distributed to the walls of the uriniferous tubes as constituting an afferent

system precisely corresponding to that which he has described in other tissues, and capable of influencing through the nerve centre the efferent fibres distributed to the arteries.

Thus they govern the calibre of the arteries, and necessarily regulate the proportion of blood flowing through the capillary vessels. The ganglia within the kidney are also connected with ganglia external to the organ, as well as with spinal nerve fibres, which probably connect the renal nerves and ganglia with the great nerve centres.

The author suggests that we may perhaps explain in this way the influence exerted by emotion upon the secretion of urine. Currents which usually cause a certain amount of contraction of the muscular fibre cells of the artery may be supposed to be neutralized or diverted. Dilatation of the vessel occurs. A rush of blood is suddenly determined to the Malpighian capillaries, and an abundant flow of watery urine immediately follows. These careful anatomical researches must necessarily lead to important conclusions with reference to renal phenomena both normal and abnormal. Seeing in them the germ of much more accurate knowledge we the more regret that Dr. Beale has so decidedly adopted the view that the sole function of this nervous apparatus is to regulate the circulation of the arterioles and capillaries. He assumes that the filaments which ramify upon the tubules are *afferent* (vaso-sensory) merely, and refuses to believe that they can take part in influencing the secretory process except indirectly as portions of the reflex vaso-motor circles. This limitation is founded upon the failure as yet to detect the passage of any filaments to the cells themselves.

We find a record of investigations into the minute vascular system of the kidney, which clears up a disputed point and exhibits the existence of a *collateral circulation* of great importance in certain diseased conditions. Most of the blood entering by the renal artery passes in health directly to the Malpighian tufts, thence through the emerging vessel and the inter-tubular network to the converging branches of the emulgent vein. Of the comparatively small quantity which passes *inwards* toward the apices of the pyramids, the greater portion flows into the *vasa recta*. These, which have been injected by Arnold, Hyrtl, Leydig, Virchow, and Beale, terminate in a capillary network in the longitudinal meshes of which the straight portions of the tubes lie. Some of these straight vessels, however, are divisions of those which emerge from the tufts lying near the bases of the pyramids. This arrangement was fully described by Bowman in his memoir; but he thought that *all* the straight vessels in the pyramids came from the Malpighian bodies. Virchow, on the other hand, seems to have concluded that all or nearly all consist of *vasa recta*, while Barres and Kölliker have failed to find them altogether. Both varieties undoubtedly exist in considerable number, and in cases where the cortical circulation is impeded we have a collateral channel by which the blood, still propelled through the main renal artery, returns to the vein without passing through the tufts. Accordingly we find under such circumstances that the *vasa recta* are enlarged and thickened.

The anatomical views of the author most directly bearing upon renal pathology are those concerning the so-called "matrix." This, described and delineated by Goodsir, Kölliker, and Dr. George Johnson as a distinctly fibrous supporting framework, in the meshes of which tubes and vessels ramify, he has not succeeded in demonstrating. All that can be proved to exist in a young healthy kidney is a very small amount of per-

fectly transparent tissue, which connects together the tubes and vessels. It is argued that the structures do not need any supporting tissue, as they mutually support each other; and any matrix would tend to increase the distance between the secreting cells and the blood, and so render the gland less perfect and less fitted for the performance of its function. In reality, every arrangement consistent with strength is adopted to diminish this distance. Moreover, the matrix ought to be developed as a distinct structure; but in a careful examination of embryonic kidneys we cannot fail to be struck by the absence of such fibrous or connective tissue. It is at this early period that the tissues are softest and most in need of support; yet they are peculiarly destitute of any such framework. The conclusions finally reached are stated as follows:—

1. "In the cortical portion of the kidney there is no evidence of the existence of a 'fibro-cellular matrix' distinct from the walls of the tubes and capillaries."

2. "The fibrous appearance observed in thin sections of the kidney which have been immersed in water is fallacious, and is due to a crumpled, creased, and collapsed state of the membranous walls of the secreting tubes and capillary vessels."

3. A small quantity of transparent material is to be demonstrated between the walls of the tubes and the capillary vessels in health; and not even this can be detected at an early period of development.

Virchow and his followers, as is well known, assign extreme importance to "connective tissue," regarding it not only as an essential part of every organ—a necessary foundation upon which the other textures are raised as a superstructure—but holding that it is concerned by its corpuscles and supposed tube system in the distribution of nutrient matter to other and higher tissues.

"Some members of the Dorpat school have given it, if possible, a still higher significance," and have regarded it as a principal element of the highly organized cerebro-spinal system.

Dr. Beale, dissenting from these authorities upon the general question of the functions of connective tissue, and taking issue with them as to its existence, even, in the special instance of the renal structure, diverges yet more widely from their views when he comes to consider the organic changes of the kidney in disease. He holds that, in the contraction and wasting which affect glandular organs (cirrhosis), the connective tissue is passive, and that what has been so termed, in sections of contracted and other kidneys, is really composed chiefly of altered vessels and wasted secreting structure; the epithelial and vascular elements having been concerned in changes which would assuredly end in total destruction of the organ were their progress not arrested by the patient's death. In considering the various forms of chronic Bright's disease, the author rejects as unsatisfactory the division into *tubal*, *intertubal*, and *vascular*, because it is to him "quite certain that the intertubular connective tissue is not the seat of origin of any form of renal disease, while it is at least most doubtful if the vessels can in any case be regarded as the starting point of morbid actions." He then proceeds to describe certain pathological conditions, which may occur independently of each other, or coexist in various degrees of development. These are *contraction and wasting of the kidney*; *enlargement*; *fatty enlargement*; *fatty contracting kidney*; and the so-called *amyloid*, *waxy*, or *albuminous degeneration*. Dr. Dickinson, in his late valuable work on *Albuminuria*, strongly maintains the usual

view concerning the series of processes resulting in the "granular kidney." Dr. Beale, on the contrary, concludes that those forms of disease which are supposed to result from hypertrophy or inflammation of the matrix are due to neither hypertrophy nor inflammation of any kind whatever. The secreting tubes shrivel and waste, and leave a residue of condensed "connective tissue." The cause of this change is to be sought for in connection with the cells themselves. An organ which is made to take upon itself an undue amount of work, at first undergoes considerable and rapid increase in size. The relation of the structures to each other becomes altered, and action seriously deranged. Then wasting of the whole commences, and continues so long as life lasts. We believe that the profession will decline to accept either of these doctrines to the exclusion of the other; or, indeed, to declare any final judgment at the present time.

*Increased size of the kidney* is referred, 1, to vascular distension; 2, to multiplication of cells in the uriniferous tubes; and 3, to the formation and growth of new (extra vascular) material. The production of all material outside of the capillaries is regarded as due to particles of germinal matter, which have passed through the vascular walls, and in no instance to the connective tissue corpuscles. This passage of germinal matter occurs most frequently in cases of chronically altered blood, long recognized as a potent cause of Bright's disease. The kidney described as "*large, white fatty*," with stellate veins upon the surface, is in no way related to other forms of renal disease. It *may* become smaller, but does not *necessarily* precede chronic wasting.

One of the most serious forms of structural alteration is the *fatty contracting* kidney, where the formation of new texture, the deposition of fatty matter, and the shrinking and wasting of the gland tissue are proceeding at the same time. The occurrence of these various changes renders this condition very difficult to investigate. Tubes distended and conspicuously enlarged lie side by side with those which are very narrow and shrivelled. These latter, with the intertubular capillaries, are often obscure, and are described as "indefinite granular matter." In the accompanying plate they are here distinctly delineated.

The account given by Dr. Beale of "*albuminoid*" degeneration does not throw any additional light upon the subject, and seems to us to contain a very imperfect recognition of the investigations of Dr. Dickinson. Indeed it is scarcely just to omit all reference to the sulphate of indigo test. More to be commended is the exception taken to the "depurative" theory. "If this is true, there ought, one would think, to be some quantitative relation between the purulent discharge and the development of the amyloid; but in some cases of waxy liver, where the organ weighed eight or ten pounds, no history of purulent discharge was obtained," and to attribute the disease under such circumstances to albuminuria does not in any way strengthen the position. On the other hand, long-continued purulent discharge frequently occurs without any amyloid "residuum" being discovered. We agree in the conclusion that "the waxy disease, the purulent discharge, the disease of bone, and tubercle where it exists," are the results of a common cause and not consequences one of another.

This section contains full accounts of other structural changes of the kidney, as also of the symptoms and treatment of renal diseases; but we pass over these, desiring only to call attention to the completeness of the work, and to dwell upon the most important of the author's peculiar views.

Part II. (p. 90 to p. 174) treats with very great detail, care, and clear-

ness of *Healthy Urine and its examination* by chemical and microscopical tests, with descriptions of necessary apparatus; enlarges upon its *general characters and constituents*; and gives a very satisfactory series of directions for *volumetric analysis*. This last section was prepared by Mr. Sutton, and while less extended than that in the work of Neubauer and Vogel is eminently practical. We think the introduction of the "fluid decem" (equal to ten grains of distilled water at 62° Fah.) as a unit of measure, unnecessarily confusing. It is better to adhere uniformly to the cubic centimetre. Dr. Schunck's important researches upon the extractive and coloring matters are stated at length in their appropriate position.

Part III. (p. 174 to p. 281) is devoted to the discussion of *urine in disease*, under the heads of 1. Excess or deficiency of water and the organic constituents. 2. Excess or deficiency of the inorganic constituents. 3. Soluble substances which do not exist in healthy urine. Many highly illustrative cases and accurate analyses are recorded in this connection. We can only select the most important conclusions.

*Phosphates in Diseases of the Nervous System*.—After detailing at length the observations of Bence Jones, Sutherland, Adamson, and others, extending over a great variety of cases, and combining them with his own, Dr. Beale declares that the evidence so far compels us to conclude that the action of the brain exerts little or no influence upon the secretion of phosphates; while the nature and amount of the food, the weight of the body, and the state of the organism, may produce very considerable variation. While he does not deny that increased nervous action may be associated with the formation of an increased quantity of phosphoric acid, which is eliminated in the urine, he thinks the facts hitherto advanced in favour of this view are by no means conclusive; and he therefore holds that we are not yet in a position to form any theory upon the changes occurring in health or disease, in cerebral action, regarded from this point of view.

The careful modifications of the ordinary processes required to determine the presence or absence of *albumen* in doubtful cases, and the numerous anomalies familiar to those accustomed to manipulate with urinary tests, are appropriately developed. They will be found very useful for reference by those who are surprised on finding a precipitate produced in urine containing no albumen, and no precipitate occurring although albumen is present.

*Bile*.—We agree entirely with the author in placing a low estimate upon the value of Pettenkofer's test as usually employed, and in discrediting the conclusions reached by Harley and others through its use. Hoppe's modification, no doubt, answers so well as to be much more reliable; and in the hands of Kühne has succeeded in detecting bile acids in almost every case of icteric urine. The question of the clinical significance of bile in the urine is certainly an open one, and its decision waits upon the employment of a certain test and many observations. To maintain with Dr. Harley the easy diagnosis between jaundice "from obstruction" and jaundice "from suppression" is premature, but not more so than to deny, as Dr. Beale does, that icterus is ever due to the latter cause.

*Sugar*.—In connection with the more familiar processes for the detection of diabetic sugar we find the *Bismuth test* recorded. This has been recently proposed by Böttger, and consists in adding first of all potash and then a small quantity of subnitrate of bismuth; lastly the mixture is boiled. If sugar is present, the oxide is reduced to metallic bismuth, which is precipitated in the form of a black powder. Brücke claims that this test is

more delicate than Fehling's, and he finds that the black precipitate is produced to some extent in healthy urine. Since Fehling's test will, when properly employed, detect a fortieth of a grain per cent. of sugar, the greater accuracy of this test can scarcely be a matter of much practical importance; but it is a useful addition to the means of investigation previously known.

Upon the consideration of the production of sugar, Dr. Beale enters at length. He accepts the views of Bernard upon the sugar-forming function of the liver, gives a *résumé* of their confirmation by Thudichum, Harley, and himself, and dissents from the opinion of Pavy and McDonnell that the conversion of glycogenic matter into sugar is exclusively a *post-mortem* change, and never occurs during life in a healthy state. The opinion may be entertained, but no one has succeeded in demonstrating that it is correct. He then approaches the subject from an anatomical point of view. In opposition to Henle, Handfield Jones, and Frerichs, but supported by many microscopical preparations now in his possession, he maintains that the liver-cells *lie in tubes continuous with the ducts*. These liver-cells consist, as others, of germinal matter and formed material, without cell wall, and they act as analogous elements in other glands. The substances absorbed from the intestinal surfaces do not simply pass between nuclei or cells and undergo change, but they serve as pabulum to certain cells which live upon them and grow. The living particles of these cells at length die, become formed material. In this may be found other kinds of fatty, amyloid, and saccharine matters than those originally absorbed. They are entirely new bodies. From the disintegration of the outer part or formed material of the so-called liver-cells result biliary matters, an albuminous substance like casein, and the amyloid or glycogene. The first named are excreted along the tubes and ducts, the two latter permeate the animal membrane and pass into blood. What then becomes of them is uncertain, but when the normal relation between production and consumption is in any way disturbed diabetes results. "There can be no doubt that certain parts of the nervous system are seriously implicated in all such cases, but whether the nerves exert a direct influence upon the sugar-forming or sugar-destroying processes, or only affect these operations indirectly through their control over the calibre of the arteries, and therefore upon the quantity of blood, is not known;" but there are many facts which favour the latter view, and no one has yet traced a nerve fibre into an epithelial cell. Here, as in the case of the kidneys, we think the author is too hasty and exclusive in his limitation of the mode of nervous action, and that it produces results which cannot be referred to mere alterations in the quantity of blood circulating through the organs. Due attention is given to the clinical importance of sugar in the urine, to its association with other diseases, and to the treatment of the affection; but no particularly novel propositions are advanced.

Part IV., upon *Urinary Deposits, Renal Entozoa, and Urinary Calculi*, contains a full *résumé* of all our knowledge upon these subjects. It is eminently practical, and so systematically arranged and richly illustrated, that notwithstanding the multitude of its details, it everywhere plainly instructs and never bewilders. It contains, however, fewer doctrines which are new, or suitable for presentation in a general review. Extended tables with accurate directions for examination and analysis of urine follow, and appropriately complete a work more valuable in its contents and more attractive in its appearance, than any volume upon the subject heretofore presented to the mass of the profession.

E. R.



## ANALYTICAL AND BIBLIOGRAPHICAL NOTICES.

ART. XXIV.—*Medico-Chirurgical Transactions*. Published by the Royal Medical and Chirurgical Society of London. Vol. LI. London: Longmans, Green & Co., 1868.

THE medical papers in this volume which we shall first notice, although not quite equal in interest to those in the preceding one, are nevertheless valuable, and maintain the high character of the Society's publications.

*On some of the Analogies of Cholera, in which Suppression of Urine is not accompanied by Symptoms of Uræmic Poisoning*, by WILLIAM SEDGWICK, M. R. C. S., L. S. A.—The similarity of the symptoms of the collapse in cholera to those produced by the action of corrosive poisons, has sometimes been the cause of popular tumults in places where the public mind was not familiarized with the peculiar and fatal character of the disease, and the author of this paper attempts to show that there are, in reality, some very strong points of analogy beyond those which would be observed by the unscientific and uneducated. In an article on "Diseases which may Simulate Poisoning," Devergie assigns the first place to cholera, in consequence of the suppression of urine, which is such a constant condition in the collapse of that disease. Similar opinions are expressed by Tardieu and Dr. Horace Jeaffreson.

The substances which produce collapse resembling that of cholera, belong, as a general rule, to the class of corrosive poisons, the action of which is essentially referable to the gastro-intestinal mucous membrane, and among them may be mentioned the bichloride of mercury, arsenic, and the mineral acids, especially nitric. Very similar results are, however, brought about by the poison which is generated by the decomposition of meat, and, in some cases, of vegetables and milk, and by certain of the fungi.

Numerous cases of poisoning by corrosive sublimate are referred to; in all of these suppression of urine occurred during the collapse, and in those cases which were fatal, the bladder was found empty and contracted. In a case reported by Sir James Syme, in which symptoms of poisoning were produced by the external application of mercury, suppression was also present. It is said that large quantities of corrosive sublimate may be given to horses, with the result of causing free and copious discharges of urine. This apparent discrepancy in the effects of the poison is readily explicable by the fact that it does not produce the same irritant effect upon the stomach of the horse as upon that of man.

Still more striking are the analogies between the collapse of cholera and that produced by poisonous quantities of arsenic; for among the symptoms of the latter we find suppression of urine, cyanosis, conjunctival injection, cramps, pulselessness, and occasionally serous and white discharges, and, after death, a physical alteration of the blood closely resembling that which occurs in cholera. In fact, the symptoms of the two conditions are so nearly the same, that cases of arsenical poisoning have been mistaken for cholera, and *vice versâ*. In the few cases in which the urine has been freely secreted after the ingestion of large quantities of arsenic, the poison has appeared to exercise less than the usual irritant effect upon the stomach. M. Delafont states, as the result of experiments with arsenic upon dogs and horses, "that in none of the animals submitted to the experiment has the secretion of urine been suppressed;" showing, probably, that these animals present less susceptibility than man to its action.

In a case of poisoning by hydrochloric acid, there was suppression of urine, but no purging; and, in another case, the bladder contained no urine. Poison-

ing by sulphuric acid produces suppression of urine, an empty and contracted state of the bladder, anæmia of the lungs, and a dark and syrupy condition of the blood. From the researches of M. Tartra we learn that the urine is suppressed, and the bladder found empty and contracted, when poisonous quantities of nitric acid have been swallowed. In referring to a case, he remarks that while "the hideous aspect of the body of the unfortunate sufferer resembled that of a corpse," the mind was unimpaired.

In speaking of the symptoms produced by animal and vegetable poisons, Mr. Sedgwick refers to the history of a family, three of whom died, and in whom symptoms resembling those presented by the collapse of cholera, were produced by eating tainted mutton, and says that Dr. Christison has remarked that "Game, only decayed enough to please the palate of the epicure, has caused severe cholera in persons not accustomed to eat it in that state." The case reported by Orfila and Marc, of the poisoning of several persons, all of whom were customers of a particular dealer in goat's milk, and in whom similar symptoms were noticed, is still another illustration.

Among the symptoms mentioned by Tardieu as characteristic of poisoning by fungi, are feebleness of the pulse, coldness and discoloration of the skin, and suppression of the urine.

In all these cases it must be admitted that analogy is not unfavourable to the theory which ascribes cholera to a specific blood poison, and the disturbance of the abdominal centre of the sympathetic nervous system, may be only secondarily affected through the ramification of the vaso-motor nerves; but there remains a large class of cases which present similar symptoms, that cannot be thus explained; and in this class we may place perforation, rupture, and laceration of the stomach and small intestines; over-distension of the stomach, and impassable obstruction of the bowel. Several cases in which suppression of urine and a contracted state of the bladder followed these accidents, are reported, the patients presenting generally pulselessness, with coldness and lividity of the surface, shrunk fingers, and blueness of the finger nails. In one of the cases in which there was perforation of the duodenum, Dr. Clarke says: "The right cavities of the heart were gorged with blood, and the left empty;" and in commenting on the case remarks: "One could scarcely have wondered if it had been mistaken for cholera."

In order that the diminution of the secretion of urine may not be attributed to the escape of fluid through the perforation into the peritoneal cavity, and the consequent diminution of absorption, Mr. Sedgwick refers to two cases of rupture of the hepatic duct, in which suppression of urine occurred. The cause of this suppression he believes to be the cessation in the formation of urea due to the arrest of the organic functions presided over by the sympathetic nervous system. No corresponding arrest of function usually occurs in those organs which are remote from this influence. He cannot accept the view that urea is excreted by the intestines, and it is, of course, impossible to believe that it can accumulate without the occurrence of uræmia, which never takes place in cholera. Dr. Garrod has proved that the formation of urea is checked during the collapse of cholera, and there is at least presumptive evidence that the same thing takes place in collapse from other causes. In conclusion Mr. Sedgwick says, that "although analogy can only be referred to for the purpose of supplying indirect evidence, yet, on the present occasion, this is so strongly in favour of cholera being primarily due to an affection of the sympathetic nervous system, developed through the medium of the digestive canal, as scarcely to need any further evidence to support it."

*On Excess of Urea in the Urine as a Guide to the Diagnosis and Treatment of Certain Forms of Dyspepsia and Nervousness*, by HENRY W. FULLER, M. D., etc. etc.—A full analysis of this paper appeared in the number of this Journal for April, 1868, p. 533.

I. *On Certain Points in the Anatomy and Pathology of Bright's Disease of the Kidney*. II. *On the Influence of the Minute Bloodvessels upon the Circulation*, by GEORGE JOHNSON, M. D., etc. etc.—Dr. Johnson begins his paper by stating that all cases of chronic Bright's disease may be arranged in two distinct classes. The first includes all those cases in which, after death, the

kidneys are found small, red in colour, and presenting an uneven or granular surface; while in the second are included all those cases in which the kidneys are large, pale, and smooth on the surface. He disagrees with those who believe that the alterations in the granular kidney depend upon an inflammation or hypertrophy of the interstitial tissue, as he has never been able to discover with the microscope anything between the tubules but the atrophied remains of tubes and capillaries, and finds in the red colour of the kidney a contradiction to the theory of intertubular deposit.

In a paper which was published in the 33d volume of the *Medico-Chirurgical Transactions*, Dr. Johnson described a condition of the minute arteries, which he had observed in Bright's disease, and which consisted in hypertrophy of their muscular coat. This hypertrophy he believed at that time to be developed for the purpose of assisting in the propulsion of blood through the obstructed capillaries. This explanation he now knows to be untenable; for the contraction of the small arteries, he says, instead of assisting the flow of blood, would tend to impede it; and since wherever there is diminished secretion, as in an inflamed kidney, there is a diminished demand for blood, these arteries, by their contractility, tend to regulate the supply of blood to a part. If the condition which has given rise to their contraction be a permanent one, hypertrophy must result. He has recently examined the small arteries of other parts of the body in patients who have died of Bright's disease, and finds that similar changes are to be detected in the arteries of the brain and its membranes, the intestines, and the skin. The cause of the hypertrophy in these cases is the contraction induced by the poisoned condition of the blood. By the impediment thus offered to the circulation of the blood in every part of the body, the hypertrophy of the heart, constantly found in Bright's disease, can be readily explained.

As the altered condition of the blood in this disease causes contraction, so Dr. Johnson believes the poison in the blood of patients with cholera induces a similar contraction of the bloodvessels of the lungs.

This paper is illustrated with two plates, showing the hypertrophy of the minute arteries.

*On the State of the Optic Nerves and Retinae, as seen in the Insane*, by T. CLIFFORD ALBUTT, M. A., M. B., etc. etc.—This interesting paper was fully noticed in the number of this Journal for Jan. 1869, page 273.

*On Paralysis of the Extensors*, by REGINALD E. THOMPSON, M. D.—Dr. T. describes a form of paralysis, which he thinks has hitherto escaped detection. The patients in which this condition has been observed have generally been intemperate and free livers; have suffered from what they describe as rheumatic attacks, and, after a period more or less prolonged, in which they have complained of hyperæsthesia; have gradually become affected with paralysis of the extensors of the hand and frequently also of those of the feet. Of the six patients whose histories are recorded in this paper, five were women. In none of the cases was there any reason to believe that lead poisoning existed. Two of the cases proved fatal. The autopsy in one of them showed that "the brain throughout was very pale, and was also rather wet, a considerable amount of serum dripping from it on section, but with this exception, it was quite natural. On exposing the spinal cord it was found to be softened in two places; the upper lesion was opposite to the sixth cervical, the lower opposite the twelfth dorsal vertebra. These lesions were rounded and formed a limited swelling ( $\frac{1}{4}$  inch by  $\frac{3}{8}$ ) on the posterior columns, with a depression in the centre of the swelling, the seat of considerable softening." No more minute examination of the spinal cord appears to have been made. The muscles of the forearm were in an early stage of fatty degeneration; the musculo-spiral and perineal nerves diminished in size.

In both the fatal cases, epileptiform convulsions occurred just before death.

*On a Remarkable Case of Extreme Muscular Atrophy with Extensive Disease of the Spinal Cord*, by ZACH. JOHNSON, A. M., etc., and J. LOCKHART CLARKE, F. R. S.—The patient was a peasant, 32 years of age, who gave the following history of his case. Previous to inoculation, which was performed when he was a year old, he was an exceedingly healthy and well developed child,

but during the fever caused by the inoculation, he gave evidences of severe indisposition and when the eruption was at its height, his left arm was observed to droop and become powerless, and soon after his right arm was similarly affected. It was some time before he regained any power in either arm; some of the muscles in the meanwhile becoming atrophied. At the same time the action of the heart became irregular and tumultuous, and continued to be so up to the time he came under observation. This history was corroborated by his mother in such a way as to leave no doubt of its accuracy.

The following were the appearances presented. The muscles of the shoulder and arm had almost entirely disappeared, the muscles of the forearm remaining unaffected. The muscles of the ball of each thumb were almost altogether gone, while the muscles of the fingers continued to be well developed. The muscles on the dorsum of each scapula were nearly gone also. The various organs of the pelvis, including the genitals and the lower extremities, were well developed. Had the development of the entire frame been equal to that of the lower part, the man would have been 6 ft. 6 in. or 7 ft. in height.

The post-mortem examination showed that the posterior nerve roots of the greater part of the spinal cord were normal; the anterior in a state of extreme atrophy, but still containing nerve tubules. The lower part of the cervical enlargement was sent to Mr. Lockhart Clarke for examination, who found the most unequivocal evidence of extensive lesions in both the white and gray substances. "At its upper end, the surface of the posterior column was softened and infiltrated with granular exudation, so that the posterior roots of the nerves were more or less destroyed, while the pia mater was thickened, and also infiltrated with fluid exudation. When this portion of the cord was carefully hardened in chromic acid, and transverse sections were examined, it was not difficult to perceive that extensive lesions and displacements of the gray substance had taken place." A large number of the nerve cells were found in different states of atrophy and disintegration. In some cases they were reduced to mere granular points, and in other instances, although not much reduced in size, they had lost their sharpness of outline, and consisted of an uneven aggregation of granules.

In seven other cases of muscular atrophy, in which Clarke examined the spinal cord, he found lesions of the nervous centres supplying the affected muscles, and the only question which remains to be settled is, whether the lesions of the nervous centre precedes the muscular atrophy, or are caused by it. Clarke unhesitatingly decides that the lesions in such cases as the above precede the development of the atrophy. He has, however, no doubt that the simple atrophy of the spinal cord, without exudation, may be caused by atrophy of the muscles, and finds a confirmation of this view in the fact that this atrophy of a part of the cord is very apt to follow amputation of the limb. Mere functional disturbance of the spinal cord will produce atrophy of muscles, as in the case of the boy who fell violently on his sacrum, and in whom wasting of the gluteal and lumbar muscles occurred as a consequence, which, however, was cured by a succession of blisters.

I. *A Study of the Influence of Weather and Season upon Public Health*, by EDWARD BALLARD, M.D., etc. II. *A Comparison of the Influence of Variation of Temperature upon general Sickness, in the colder and warmer seasons of the year.* III. *On the Influence of Daily Range of Atmospheric Temperature.*—The first paper on this subject was noticed in the April number of this Journal for 1868. The two which are contained in the volume before us bear evidence of much labour in their preparation, but are very difficult to condense. We do not think we can do better than give our readers some of the general conclusions of the author. "In the colder weeks of the year, a fall of mean temperature was much more frequently associated with decrease of sickness, than in the warmer weeks."

"In the colder weeks of the year a rise of mean temperature was associated with increase of sickness more frequently than in the warmer weeks."

"In the weeks of rise, with increased range, increase of sickness occurred less frequently than when the range of temperature was simultaneously reduced. \* \* \* \* This fact becomes the more striking, when it is observed that both

the mean extent of the rises of temperature, and of the alteration of range was greater in the former than the latter groups of weeks." J. H. H.

We shall now consider the papers contained in this volume which are of especial interest to surgeons.

IV. *On the Cure of Cleft Palate by Operation in Children, with a Description of an Instrument for facilitating the Operation*, by THOMAS SMITH, F.R.C.S., etc.—This paper is of much interest, but has been already sufficiently noticed in the Quarterly Summary of the number of this Journal for April, 1868, pp. 541-2.

V. *Case of Double Hernia in a Single Sac*, by HENRY LEE, F.R.C.S., etc.—The patient had been ruptured for about ten years. Eighteen months before the occurrence of strangulation a second tumour had appeared in the groin, being forced upwards when the original hernia descended, and occupying the place of the latter when it was returned into the abdominal cavity. This second tumour was supposed by the patient to be the testis, which on that side (the right) had not descended into the scrotum. Strangulation persisting, an operation was resorted to, which showed that both tumours were hernias, separate portions of bowel having descended through different apertures into the same sac. "The explanation of the mode in which two distinct ruptures found their way into a single sac in this case, I conceive to be as follows: The right testicle had probably lodged at the internal ring. The first hernia had descended in front of the testis; a truss was then applied. The two layers of sac were thus compressed between the testis behind and the truss in front. The portion of the sac covering the most projecting portion of the testis would thus be subject to a greater degree of pressure than any other portion. I conceive that adhesion between the two opposed layers of the sac had here taken place; but that where, in consequence of the oval shape of the testis there was a less degree of pressure, no adhesion had occurred. The two layers of the sac would then be united opposite the most projecting part of the testicle, and an aperture would be left on each side of the adhesion thus formed. Whether or not this be the true explanation, there can be no doubt that very firm adhesions existed at the neck of the sac, and that on each side of these adhesions a hernia came down."

VII. *Notes respecting Non-uniting Fractures*, by GEORGE W. CALLENDER, F.R.C.S., etc.—An abstract of this paper was published in the number of this Journal for July, 1868, pp. 276-7.

VIII. *A Case of Axillary Aneurism on the Right Side, for which the Subclavian Artery was successfully tied; the Left Subclavian Artery having been ligatured in the same subject for an Axillary Aneurism about three years previously*, by EDMUND J. FURNER, F.R.C.S., etc., communicated by SIR WILLIAM FERGUSSON, Bart.—This is an extremely interesting case, and is well told. The first operation was performed in 1863, an account of it being published in the *Medical Times and Gazette* for October 24th of that year. The second deligation became necessary on October 24, 1866. Upon this occasion the aneurism had been in existence about two months, the patient however being able to work until five days before the operation. The external jugular vein was tied during the operation, which was done without the aid of chloroform. The ligature from the subclavian artery dropped on the twenty-fourth day, and the only misadventure in the after progress of the case was suppuration of the sac, which occurred after twelve weeks. Eighteen months after the operation the patient was presented to the Fellows of the Royal Medico-Chirurgical Society in robust health, having resumed the laborious occupation of a labourer on a railway.

IX. *Case of Cystic Disease of the Kidney simulating Ovarian Disease*, by HENRY COOPER ROSE, M.D., etc.—In this case the patient had suffered from a tumour which occupied the position of the left ovary, for a period of fifteen years. No pain was ever referred to the region of the kidney, and the urine was always normal, except upon a few occasions, when she suffered from hæmaturia. With the exception of the latter symptom, there was nothing in the case to conflict with the diagnosis of ovarian disease, and in fact the propriety of an operation was at one time seriously considered. Dr. Rose terminates his paper by referring to a similar case reported by Mr. Spencer Wells, in the

*Dublin Quarterly Journal of Medical Science* for February, 1867, in which ovariectomy was attempted with, of course, a fatal result.

X. *A History of Seven Cases in which a Morbid Growth was removed from one of the Vocal Cords by the Aid of the Laryngoscope*, by GEORGE JOHNSON, M.D., etc.—This is a very interesting paper, and is illustrated with a lithographic plate showing the position of the morbid growth in each case. In four out of the seven, the cure was complete, the voice being restored to its original strength and clearness. In two more the restoration was nearly complete; while in one considerable weakness and huskiness of voice persisted, in consequence of a general roughening of the vocal cords, which prevented their close apposition. In each case the morbid growth was situated on the true vocal cord on the right side. Dr. Johnson operates with an *écraseur*, modified by himself from that employed by Sir Duncan Gibb.

XI. *A Contribution to the Surgical Pathology of Sero-sanguineous Cysts in the Neck and Axilla*, by JOHN BIRKETT, Surgeon to Guy's Hospital.—This paper is adorned with four lithographic plates, one of them being handsomely coloured. The cases to which Mr. Birkett has given the name of "sero-sanguineous cysts," are those which Professor Syme and others have described as "hydrocele of the neck," and resemble those which Sir Benjamin Brodie and others spoke of as "sero-cystic tumours." Three cases are detailed which have fallen under Mr. Birkett's observation, and a few remarks added with regard to the pathology and treatment of the affection. Mr. Birkett rejects the doctrine of Mr. Paget, that these cases are transformations of vascular tumours or nævi, and believes "that this cystiform growth should be regarded as a peculiar development of its own kind and individuality." The treatment recommended consists of paracentesis, and in the event of its failure, extirpation of the entire growth.

XII. *On the Torsion of Arteries as a Means of Arresting Hemorrhage, with Experiments*, by THOMAS BRYANT, F.R.C.S., etc.—An analysis of this paper has already appeared in this Journal, in the number for October, 1868, pp. 564, 565. In the same number, in noticing a paper on Acupressure, by Mr. J. Cooper Forster, published in Guy's Hospital Reports, we ventured to predict that some years hence, Professor Simpson's method would not be so highly lauded as it was in those pages; as a commentary upon that prediction we may quote the following sentence from the paper now under consideration, it being remembered that Mr. Bryant is a colleague of Mr. Forster's at Guy's Hospital: "Physiologically, therefore, acupressure is an uncertain process, and when contrasted with the ligature and torsion stands condemned." To the doctrine embodied in the following sentence, the advocates of acupressure, in this country at least, will take exception. "In acupressure the permanent arrest of hemorrhage depends entirely upon the clot which forms in the vessel, for no evidence has yet been adduced to show that any change occurs in the inner tunics of the vessels which have been subjected to the pressure of an acupressure needle, such as is well known to take place after the use of the ligature, and such as also occurs after the application of torsion in large vessels."

Our readers may recollect that precisely the opposite was maintained by Dr. Addinell Hewson, of this city, in the first volume of the *Pennsylvania Hospital Reports*. (See notice in number of this Journal for April, 1868, p. 477.)

We may add that while we recognize the merits of both acupressure and torsion, and believe that either may be the best method in particular instances, we have as yet seen nothing to make us think that the ligature will not remain what it has been for centuries, the surgeon's surest means of arresting hemorrhage, in the vast majority of cases. Mr. Bryant's paper is adorned with three beautifully coloured lithographic plates.

XIII. *Case of Perforation of the Mastoid Cells; Subsequent Formation of an Abscess beneath the Sterno-Mastoid Muscle*, by JAMES HINTON, M.R.C.S., etc.—Mr. Hinton has met with accounts of fourteen cases in which perforation of the mastoid process has been performed for abscess within the mastoid cells. In twelve of these the operation gave perfect relief, while in two "fatal mischief already existed within the skull." With regard to the symptoms which call for the operation, we quote the following: "The indications for the perfo-

ration of the mastoid process are essentially the same as those now generally recognized as demanding an incision through the periosteum covering it, with the addition that entire relief is not given by the latter procedure. The symptoms are severe and continued; there is pain in the ear or head, especially on moving, which is accompanied or preceded by a discharge from the ear, and by tenderness on pressure over the mastoid process. If, in addition, symptoms of cerebral irritation are present; or if the bone, on exposure, is found bulging or softened in certain parts, the necessity for perforation is of course more evident. I omit from the list of indications swelling and redness over the mastoid process, for although these symptoms are generally present, yet it appears that they are sometimes absent when perforation of the bone affords the only prospect of saving life: in those cases, for example, in which necrosis extends from the meatus or tympanum, not downwards so as to involve the mastoid cells, but inwards into the upper portion of the pyramid. In such cases there may be little or no swelling externally, and yet an opening through the upper portion of the mastoid process, about on a level with the roof of the meatus externus, may enable the necrosed portion to escape, or at least may give a safe outlet to the fluid that surrounds it."

The last of the surgical papers is

XVI. *Description of the Spinal Cord in a Case of Traumatic Tetanus*, by W. H. DICKINSON, M.D., Cantab., F.R.C.P., etc.—From the account of the microscopic appearances in this case, we quote the following: "The bloodvessels appear to be, if not the first, at least an early seat of change. Distended with blood, not only to the uttermost of their natural capacity, but dilated to many times their proper width, and crammed with blood corpuscles so as to look like solid cylinders, their condition gave evidence of an altogether abnormal relation between the pressure of the blood and the resistance of the walls. Either blood had been propelled into them with supernatural force, or, what is more likely, the tension of their coats had been lessened by a change in their innervation. The overcharge of the vessels led to the escape of their contents. In some places blood corpuscles were extruded. More often only the fluid portions of the blood traversed the wall, to appear as the translucent structureless material which played so prominent a part in the destruction of the cord. That this translucent material was an exudation from the vessels, and not a product of disintegration of tissue, is evident from the following facts. It constantly lay in contact with the vessels, and often surrounded them. It held the most changeable relations to the nervous matter, lying in the gray matter, in the white, abundantly in the fissures, and occasionally outside the cord altogether. It was the source of increase of bulk, of laceration, and of displacement, such as to suggest that it was an addition to the structure, and had been forcibly driven into it. At the same time a certain amount of disintegration of the nervous elements had taken place, where the exudation came into contact with them, such as might result if, as suggested by Mr. Lockhart Clarke, the exudation had a solvent action upon the tissue. It is probable that the tendency to disintegration in the nervous matter may have been enhanced by the unnatural state of the bloodvessels, and the consequent imperfect nutrition of the cord. There are certain points of interest connected with the situation of the various lesions. The irritation from the left hand, conveyed, as we must suppose, by certain of the left posterior roots, occasioned special congestion of the left posterior horn, and further changes in the white matter in contact with it—that is, in the left posterior and lateral columns. The central and anterior parts of the gray matter were most extensively affected on the side opposite to that of the injury, as might have been anticipated from the decussation in the cord of the sensory fibres. The irritation having reached any column or segment of the cord, appeared to diffuse itself throughout its whole length with undiminished intensity. Although the cervical region must have been the first recipient of the morbid influence, the lumbar part of the cord, both in the white and gray matter, was at least as severely affected."

Two handsome coloured plates accompany Dr. Dickinson's interesting paper.

J. A., JR

ART. XXV.—*Clinical Lectures and Reports, by the Medical and Surgical Staff of the London Hospital.* Vol. IV.—1867-8. Edited by Dr. CLARK, Dr. DOWN, Mr. HUTCHINSON, and Mr. MAUNDER. 8vo. pp. viii., 525. London: John Churchill & Sons.

THE present volume of the London Hospital Reports has been long waited for, and we suspect that the explanation of the delay may be found in a certain fact revealed by the table of contents, namely, that about two-fifths of the entire volume is the work of the two surgical editors. Mr. Hutchinson alone is responsible for more than one-fourth of the whole, and may well claim credit for his industry, as well as for the ability always displayed in his writings. As has been our custom in dealing with the published reports of other hospitals, we propose to offer our readers a short analytical and critical review of the various papers embraced in this volume, thus furnishing a sort of *compte rendu* for those who may not have access to the work itself.

The first article, by Mr. CURLING, is called "*Further Observations on Lumbar Colotomy, for the Relief of Intractable Diseases of the Rectum; with Four Cases of Operation.*" In two of the cases the operation was successful; in the other two proving fatal on the eighth and sixth days respectively. In one of these cases, as in Mr. Curling's first case, which occurred in 1856, death was due to persistent vomiting, attributed to the inhalation of chloroform. In connection with this paper, we may notice a case of colotomy by Mr. MAUNDER, recorded at page 225 (fatal on the sixteenth day), and one by Mr. CARTER, successful, reported at page 286. Study of these cases confirms the opinion which we had formed from the previous labours of Mr. Curling and others upon the same subject, that the operation of lumbar colotomy is one which it is the surgeon's duty to recommend in cases of intractable disease of the rectum. The case is very different from that of internal obstructive disease of the bowel at another part, for in such instances medical treatment is usually preferable to surgical interference. The results of lumbar colotomy, when successful, are so satisfactory, and the risks of the procedure (as an operation) so slight, that it should, we think, be unhesitatingly employed in cases where it may seem to be required.

After Mr. Curling's paper come "*Four Lectures on Compression of the Brain,*" by JONATHAN HUTCHINSON, F. R. C. S. These lectures, we scarcely need say, are eminently practical and instructive. By the ophthalmoscope, Mr. Hutchinson has been enabled to study the mode in which death is produced by compression. In the case of a patient dying of simple compression, Mr. Hutchinson says: "I could see the disk fairly, and satisfied myself that the choroid was unusually pale; that the central vein of the retina was of at least average fullness, and that the artery, although small, was not extremely so. On looking a few minutes after he died, I found the artery scarcely perceptible, and the veins still of considerable size." This gives a hint as to the state of affairs in death from compression, and we are accordingly prepared to find that post-mortem examination of such cases show the brain substance itself to be in a state of anæmia: "in all probability the manner in which compression proves fatal is by squeezing the blood out of the brain substance." As a further illustration of this point, we may mention a case which came under our observation at the Cuyler U. S. Army Hospital, during the late war, of death from secondary hemorrhage from a wound in the neighbourhood of the internal jugular vein. So completely did the patient's symptoms during the last hours of his life simulate those which would result from cerebral compression, that the medical officer of his ward, who watched him with unremitting attention, was fully convinced that he was actually dying from a clot on the brain, and was much surprised to find the cranial cavity, equally with his other organs, absolutely exsanguine. There are many points of great interest, both physiologically and surgically, in these lectures, which we should like to dwell upon, but which we are compelled to pass by. From Mr. Hutchinson's "concluding remarks" we extract the following. With regard to *effusions of*



*blood between bone and dura mater*, our author says: "These are especially important, because generally supposed to be capable of relief by treatment. Yet it is a remarkable fact that the modern annals of surgery do not, as far as I am aware, contain any cases in which life has been saved by trephining for this state of things. . . . Cases of abscess between the dura mater and bone, consequent on fracture or contusion of the skull, will be exceedingly difficult to distinguish from those of arachnitis. Arachnitis is infinitely the more common result of such injuries; and you are aware that I have recently asserted, and, I think, proved, that hemiplegia is its usual symptom. In these cases there is almost always a little lymph or pus between the bone and membrane, but no collection which you could let out by trephining. If you adopt the rule of trephining in all cases in which, after bruise or fracture of the skull, the patient has become hemiplegic or comatose, with inflammatory symptoms, you will operate in twenty cases of arachnitis for one in which you will find any considerable collection external to the dura mater." With regard to abscess of the brain: "Should these symptoms [those of cerebral abscess] follow a known punctured wound of the brain, trephining and perforation of the membranes and brain may be justifiable." We believe that cases of abscess of the brain, invariably sooner or later terminate fatally; yet in a certain number life has been prolonged for a considerable time by judicious medical treatment; and the recoveries after trephining in these cases have been so very few, that we must hesitate to subscribe even to Mr. Hutchinson's qualified recommendation.

"You will have noticed," our author continues, "that I have said nothing as to depressed bone as a cause of compression. . . . I have never seen a case in which there seemed definite reason to think that depression produced symptoms. . . . I have, of course, seen plenty of cases of depressed fractures with head symptoms; but, in all, the symptoms were those of severe concussion or of lacerated brain, and not those of compression. The practice of trephining and elevation is, I think, strongly to be recommended in all cases of compound fracture with depression; but it is in order to prevent inflammatory symptoms, not to relieve an imaginary state of compression of the brain."

We think it but right to say that we believe there are at the surgeon's command, safer as well as more trustworthy means of preventing and combating inflammation of the brain than such a heroic procedure as trephining. This paper is illustrated with two lithographic plates.

We find next, also by Mr. HUTCHINSON, a very interesting "*Case of Stricture of the Oesophagus, after swallowing Caustic Potash—Gastrotomy proposed, but not performed.*" The reason that the operation was not had recourse to was, that on the day fixed for its performance the patient was found to be much better, and from that period went steadily onward to convalescence. From the result of this case Mr. Hutchinson has made up his mind that gastrotomy for oesophageal stricture is unjustifiable, and he goes on to denounce, with it, several other operations which have recently been advocated on high authority. "Opening the abdominal cavity to search for a cause of intestinal obstruction; trephining the vertebrae for fracture of the spine; ligature of the innominate or inner third of subclavian artery; the distal ligature of large vessels; and some others, are such dangerous methods of treatment that they cannot be resorted to excepting in the supposed inefficiency of all other means. Yet the cases for which they are proposed are never actually hopeless, and every now and then, in those apparently most so, recovery will ensue. . . . Respecting all the operations I have mentioned, I may express my firm conviction that the surgeon who resolutely declines to perform them will, in the long run, do more for the lengthening of his patients' lives than he who, although with the utmost acumen of diagnosis and skill in operating, permits himself to resort to them. There are other means of treatment, less brilliant, but more hopeful."

<sup>1</sup> As an amusing comment on Mr. Hutchinson's denunciation, we find recorded on a subsequent page of the volume, a case of trephining the spine (fatal) by Mr. H.'s colleague and co-editor, Mr. Maunder, and one of "gastro-stomachotomy" (also fatal) by his senior colleague, Mr. Curling.

We may add that while we are disposed to coincide in our author's views upon this subject, we were scarcely prepared for such extremely conservative doctrines from the same pen which but six pages before recommended trephining the skull as a harmless antiphlogistic.

Mr. HUTCHINSON next contributes a "*Case in which Incontinence of Urine was the first and almost the only Symptom of Prostatic Retention, with Secondary Disease of the Kidneys.*" This case, which we need not say is very well told, furnishes an additional illustration of the fact dwelt upon by Sir Henry Thompson and others, that the so-called incontinence of urine indicates an over-distended, and not an empty bladder.

The next paper is "*On Ligation of a Main Artery to arrest Acute Traumatic Inflammation,*" by C. F. MAUNDER. Mr. Maunder is mistaken in supposing, as he apparently does (page 70), that the proposal to treat joint wounds by ligating the main artery of the limb is original with himself.<sup>1</sup> We were perfectly familiar with the idea at the beginning of the late war, more than six years ago; having frequently heard it discussed among army surgeons, and we may add almost universally condemned. We have no personal experience of the plan, but we believe it to be bad surgery both in theory and in practice, for the following reasons: Theoretically we hold, with most modern pathologists, that inflammation is clinically a disease of *depression*, and hence we cannot suppose it right to add to that depression by cutting off all nutriment from the part affected. Bleeding, cupping, leeching, free incisions, when they do good in inflammations do it by their mechanical effect upon the inflamed part—the loss of blood is, *per se*, an evil. We have indeed seen cases do very well after the ligation of a main artery for secondary hemorrhage; but our experience teaches us that the same cases would have done even better without either hemorrhage or ligation. We do not think tying the femoral artery necessarily such a dangerous procedure as it is sometimes represented, but we cannot believe it such a slight matter as to be resorted to where the need of it is not very evident. Mr. Maunder considers his operation "highly conservative, as no blood is drawn from the patient." But the blood or nutritive fluid is withdrawn from that part of the patient which is already in a state of grave depression, and we do not see how the rapid cell proliferation which is going on in tissues whose vitality is already impaired, can be favourably influenced by taking away when it is most necessary, not venous blood surcharged with effete materials, but the sole supply of healthy nutriment upon which the ultimate salvation of the affected part must depend.

As we have said, we have no *personal* experience of the operation under consideration. We have, however, been assured by army surgeons of high rank and vast military experience (who have seen the practice fairly tried) that its sole effect, at least in cases of gunshot wounds of the knee-joint, has been to postpone for a variable period the inevitable changes which have followed in the injured part just as surely, though more slowly, than if the femoral artery had not been tied. We think our readers will agree with us that it will require more than the one case on which Mr. Maunder's theory is based, to show the propriety of "the ligation of a main artery to arrest acute traumatic inflammation."

In the next paper Mr. MAUNDER relates three cases of prostatic abscess which he treated by puncture through the rectum. In each case the result was entirely satisfactory.

Next follows a paper "*On Human Milk,*" by C. MEYMOTT TIDY, M. B. This paper is scarcely in place among "*Clinical Lectures and Reports.*" but is, notwithstanding, of some practical value. A curious case which occurred in Mr. Tidy's practice is mentioned, where a young lady's good name was called in ques-

<sup>1</sup> Since writing the above sentence, we have learned that Mr. Maunder has, in the *British Medical Journal* for June, 1868, acknowledged the priority of American surgeons in proposing deligation of the femoral artery under the circumstances indicated; it is to be observed, however, that though Dr. Onderdonk did suggest the operation as a prophylactic against inflammation, yet in the case in which he actually tied the artery, the operation was done to check otherwise uncontrollable hemorrhage.—*Amer. Med. and Philosoph. Register*, vol. iv. 1814, pp. 176-181.

tion from the fact of her breasts secreting a large quantity of milk: the explanation was found to be that she had taken care of the new-born babe of her married sister who had died in childbirth, and to soothe the infant had allowed it to find its way to her nipples, with the rather awkward result of stimulating the mammary glands to an unnatural and unwished for activity.

We find next a paper of sixty pages, elaborate and excellent, on "*Hoarseness and Loss of Voice in Relation to Nervo-muscular Affections of the Larynx.*" by MORELL MACKENZIE, M. D. Anything which Dr. Mackenzie has to tell us in regard to subjects which he has made so much his own as laryngoscopy and laryngeal diseases, is worthy of our attention, and hence we earnestly commend this paper to the careful study of our readers. Its nature prevents any analysis, and we have no criticism to offer: suffice to say that our author divides nervous affections of the larynx into diseases of the motor system and those of the sensory system, subdividing the former into cases of paralysis of the vocal cords, and those of spasm of the same organs. He then speaks of these affections in connection with the various muscular structures which govern the motions of the vocal cords, taking up successively the causes, symptoms, diagnosis, pathology, prognosis, and treatment in each instance. One point which we have noted for quotation is, that bilateral paralysis of the adductors of the vocal cords is common in the latter stages of phthisis, and is then frequently mistaken for actual tuberculous disease of the larynx. This mistake can be avoided by the use of the laryngoscope, and of course both the treatment and the prognosis of the case will greatly differ accordingly as the affection is or is not organic. Dr. Mackenzie has obtained great advantage, in some of these paralytic cases, from the local use of electricity, applied directly to the affected parts by means of his "laryngeal electrodes." In bilateral paralysis of the *abductors* "tracheotomy should be performed without delay to save the patient from dying of suffocation." The operation is likewise sometimes required in the spasmodic affections, laryngismus stridulus, etc.

This valuable paper gives the details of twenty-seven cases, and is adorned with two lithographic plates and several wood-cuts. An appendix discusses the subject of atrophy of the vocal cords, of which affection Dr. Mackenzie has seen four cases; three (which are related) depending on syphilis, and the fourth on chronic lead-poisoning.

Following Dr. Mackenzie's excellent contribution we find two papers upon skin diseases by Mr. HUTCHINSON. The first is called "*Hints as to the Study of Skin Diseases.*" and the second is "*A Lecture on the Treatment of Skin Diseases.*" That these papers are well written and worthy of attention is a matter of course, but they are neither clinical lectures nor clinical reports. They swell the size of the volume, and serve the purpose of padding—of a very good quality it is true—but padding nevertheless. From the second paper we quote the following summary:—

"In order to success in the cure of skin diseases we must be prepared to act promptly and energetically in the following articles of creed:—

- "1. That the itch insect is the real cause of scabies.
- "2. That a vegetable parasite is the real cause of favus, ringworm, and tinea versicolor.
- "3. That most inflammatory products are contagious, and can induce, if applied whilst living to healthy tissues of the same kind as those which furnished them, a similar form of inflammatory action.
- "4. That the contagion of recent and living pus formed by the skin is a very common cause of skin inflammations, and may induce them as well in the same patient as in others.

"5. That inflammations of the skin spread in extent by the contagion of continuity, *i. e.*, by cells produced by inflammation coming in contact with those as yet healthy.

"6. That to prevent or put an end to the contagion of inflammatory products all that is necessary is to destroy their vitality.

"7. That the vitality of inflammatory products may be destroyed by various forms of escharotics and caustics, and that it may be greatly modified by other means which stop short of destruction of tissue.

"8. That mercury, iodine, and arsenic possess marvellous powers in modifying the vital properties and tendencies of inflammatory products.

"9. That mercury is efficacious against almost all forms of the inflammatory process, provided it be used in doses sufficiently reduced not to disturb the patient's health.

"10. That mercury is efficient in procuring the resolution of inflammation, whether applied locally or introduced into the blood, and that when circumstances allow, its local use is much safer, and permits of a cure being accomplished with a much smaller quantity.

"11. That mercury possesses especial efficiency against the forms of inflammation which occur in consequence of syphilis, especially those met with within two years of the contagion (secondary).

"12. That the salts of iodine possess specific efficiency against syphilitic inflammations, especially those which occur many years after the contagion (tertiary).

"13. That a large number of skin-diseases are local from beginning to end, and are to be influenced only by local treatment; the three forms of tinea, scabies, molluscum contagiosum, porrigo, prurigo pedicularis, many forms of eczema, etc.

"14. That many other skin-diseases are local in origin, but affect the constitution afterwards, and require for cure both local and general treatment; erysipelas, many forms of eczema, many forms of prurigo.

"15. That some skin-diseases of constitutional origin are yet chiefly susceptible of treatment by local remedies—lupus, carbuncles, boils.

"16. That there is really some peculiar state of health which we cannot yet define, which renders its subjects liable to general eruptions of different forms, which are always symmetrical, always liable to relapse, usually met with in the young, and always more or less definitely under the influence of arsenic. 'To this state of health the French have given the name 'dartrous diathesis.' It accounts for common psoriasis, many forms of eczema, lichen, and pityriasis, common pemphigus, and many forms of lupus.

"17. That the 'dartrous diathesis' may be complicated by others; as, for instance, by the presence of a syphilitic taint.

"18. That nearly all inflammations occurring in the lower extremities are much influenced by hydraulic conditions which must be always kept in view in the treatment."

We next find, still by the indefatigable Mr. HUTCHINSON, "*Two Lectures Introductory to the Use of the Ophthalmoscope.*" These lectures, we learn from a foot-note, Mr. Hutchinson is in the habit of reading as part of his ophthalmic course: "They have no pretensions whatever to originality, and must be regarded merely as educational lectures." Those of our readers who may be ignorant of the theory of the ophthalmoscope, and who possess no text-book which treats of the subject, may have recourse to these lectures. It is but fair to add, that the information which Mr. Hutchinson here imparts, is not only sound, but very clearly and pleasantly conveyed.

Following these lectures is a short paper which we cannot too highly commend: "*A Statistical Report of the Deaths occurring during the year 1866, amongst Mr. Hutchinson's Patients,*" compiled by Mr. HUTCHINSON and Mr. WARREN TAY. There are five tables given which deserve careful study, but which scarcely admit of any analysis. In three cases, death was directly due to surgical operations; one case of attempted ovariectomy, fully described in the *London Pathological Transactions*; one, from pyæmia, following the ligation of piles; and a third, of pyæmia and erysipelas, after the excision of a malignant growth from the back of the hand. Two patients died of *tetanus*, the disease in both cases having existed before their admission to the hospital; three died of *erysipelas*, and thirteen of *pyæmia*.

A very interesting "*Case of Fracture of the Odontoid Process,*" in which life was prolonged for two years, is communicated by Mr. ROBERT DEBENHAM; Mr. Hutchinson appends a description of the specimen which is now in the hospital museum, and says: "The history of the case renders it probable that in the first instance a fracture without much displacement occurred. The dislocation

forwards was most likely brought about gradually afterwards with increasing compression of the cord. Thus it was not till three weeks after the accident that any symptoms came on, and after this they passed off sufficiently to allow the man to walk about. The ankylosis is probably due, in part, to the continued motion and the irritation thus produced."

The next paper, which is the last for which Mr. HUTCHINSON is personally responsible, is a kind of surgical *Salmagundi*, containing a little of almost everything which the author is in the habit of teaching. The most notable thing about this paper is a photograph giving a representation of an excellent example of the "keloid of Alibert," occurring, as Mr. Hutchinson believes it always does, in the site of an old scar.

The actual cautery is recommended in the treatment of lupus; chloride of zinc in cases of purulent or catarrhal ophthalmia; setons, in the temple, in cases of chronic ulceration of the cornea with photophobia; and the acid nitrate of mercury (as used by Mr. Startin) as a local application to the inflamed follicles of acne. Ophthalmia tarsi should be treated by epilation, and foreign bodies in the auditory meatus removed with a flexible wire loop.

The next paper is entitled "*Operative and Clinical Surgery*," by C. F. MAUNDER. We do not exactly see the propriety of this title, for while much clinical surgery is operative, all operative surgery (unless practised on the cadaver) is necessarily clinical. The paper contains a considerable number of cases, all of more or less interest, with remarks which though rather elementary in tone, are nevertheless, as a rule, practical and sound. We would particularly commend to our reader's attention, Mr. Maunder's views upon the question of opening the sac in the operation for strangulated hernia. Mr. Maunder does not open the sac, except, "Firstly, when local or general symptoms, or both combined, lead me to suspect that a serious pathological change has taken place in the contents of the sac. Secondly, when the stricture is either in the neck of the sac itself, or reduction is impossible by reason of some, at present unknown and irremediable, physical condition of the contents of the sac." To this we would add, that in any case where the strangulation had existed for a considerable period, even if the symptoms were not alarming, it would be safer to open the sac.

A case of some practical importance is one in which for secondary hemorrhage from a sloughing wound of the thumb and hand, the brachial artery was tied, the patient dying from exhaustion (without return of hemorrhage) four days later. We believe that more mistakes are made and more harm done by young surgeons in the management of secondary hemorrhage than in almost any other contingency of surgical practice. In our large army hospitals, during the late war, we generally found that the first thought of the junior medical officers was to stuff a bleeding wound with Monsel's salt (*ferri persulphas*), the result almost always being a large sloughing surface and a quick return of hemorrhage. Those who had a little more confidence in their own operative skill were anxious to tie the main artery, in all cases, above the wound. It seems strange that the time-honoured rule of Guthrie and others, to tie the artery above and below the bleeding point, should be always taught, and yet so often practically ignored. With regard to Mr. Maunder's case, which we have made the text for these remarks, we may say that we have seen excellent results in such cases from the use of *forced flexion* as practised by Mr. Ernest Hart in the treatment of aneurism. Should this plan fail, and we could not find the source of hemorrhage, we should use acupressure as near as possible to the bleeding part. Should this, too, prove unsuccessful, it would be a question whether amputation would not be, in some cases, safer than ligation of the main artery.

Under the heading of "*Crimean Reminiscences*," Mr. MAUNDER adds a case of recovery from compound fracture of the skull, and one of hemorrhage after amputation of the thigh, the bleeding being checked by pressure, but death following, apparently from pyæmia.

The next paper is by JOHN COOPER, F.R.C.S., and contains three cases of great interest. The first is one of extraction of a bullet from the sacrum, more than twenty-one years after the reception of the wound; the position of the foreign body was accurately determined by the use of Nélaton's probe. The

second case, which is illustrated with a lithographic plate, describes an autoplasmic operation for the relief of a congenital deformity of the pinna of the external ear; and the third describes a curious congenital tail-like appendage on an infant's back, a very good wood-cut showing the appearance of the growth.

Mr. LITTLE next contributes two cases of *cleft palate*, in which the fissures, involving both hard and soft palates, were closed in either case by a single operation; and a "*Description of the Trunk of a Man affected with Lateral and Posterior Spinal Curvature*." The following remark is important: "In examining a living subject of lateral curvature, it must be remembered that a slight deviation from the normal position in the spinous processes, indicates very considerable displacement of the bodies of the vertebræ, and preventing cure in many cases." This case is illustrated with a lithographic plate.

Mr. CARTER's case of colotomy we have already referred to in noticing Mr. CURLING's paper in the beginning of the volume, and we will therefore next pass to "*Some Remarks on Tricuspid Regurgitant and Mitral Presystolic Bruits*," by HENRY G. SUTTON, M.B. Our author sums up his views on the tricuspid regurgitant murmur as follows:—

"There is evidence to show that tricuspid regurgitant bruits are much more common than we have been led to believe.

"That the regurgitation which causes this bruit is dependent upon great dilatation of the right ventricle.

"That this dilatation, in most instances, is brought about by chronic disease obstructing the circulation through the lungs or mitral orifice.

"That this bruit is most frequently met with where the obstruction has existed for a long time, and has, apparently, been continuous; for instance, in fibrous induration and contraction of the lungs, or in great contraction of the mitral orifice. Where the obstruction has seemingly been of interrupted and variable intensity, the murmur has been usually absent, as in cases of vesicular emphysema with intercurrent bronchitis.

"For the development of the murmur, it would appear to be requisite that the right ventricle should be not only dilated, but considerably hypertrophied."

With regard to the presystolic mitral bruit, our author, differing from most writers, believes it to be "one of the most common bruits that the physician has to deal with;" he has himself observed no less than twelve cases in the short space of two years.

Mr. F. M. MACKENZIE contributes four cases of interest: one of retroversion of the gravid uterus at three months and a half, followed by abortion; one of the same displacement (at three months), recovery taking place without abortion; one of death following division of the cervix uteri with Greenhalgh's bilateral metrotome; and one of death from peritonitis following puncture of an imperforate hymen.

We find next, also communicated by Mr. MACKENZIE, a case which was under Mr. CURLING's care of "*Malignant Growth of Peculiar Structure from the Bones of the Skull of a Child*." The tumour was "crossed from before backwards by vertical plates of thin bone, attached at their thickest part to the outer table of the frontal bone, and gradually becoming thinner, ending, at the circumference of the tumour, in fibrous membrane. . . . Within the skull the spiculæ were smaller, and shorter than from the outer table of the frontal bone." Two wood-cuts are given, the second showing very well the curious radiated arrangement of these bony lamellæ.

From a note appended by Mr. Hutchinson, we learn that there is a similar specimen in one of the Dublin museums.

The next paper is the longest, and, without question, one of the most valuable in the volume. It is called "*Cases of Disease of the Nervous System*," and is by Dr. J. HUGHLINGS JACKSON, whose articles on nervous disease in the previous volumes published by the London Hospital have assisted very materially in giving to the series the high reputation which it has obtained. The thirty cases embraced in the present paper are to be used hereafter by their able author for the illustration of the several subjects respectively of Cerebral Amaurosis, Syphilitic Affections of the Nervous System, Physiology of Language, and Cerebral Hemorrhage. In the present volume he confines himself to giving

the cases themselves, with occasional comments on various points of less importance. We would gladly transfer this paper bodily to our pages, but must content ourselves with urgently commending it to the careful study of each of our readers, limiting our quotations to the following remarks upon the important subject of cerebral abscess:—

“Abscess of the brain nearly always occurs as a secondary consequence of disease of some part of the cranial wall. Judging from my own experience—which, of course, is nearly limited to medical cases—I should infer that the bone oftenest diseased in connection with cerebral abscess is the petrous bone. More rarely disease of the nasal bones gives rise to it.

“The surgeon, however, sees cerebral abscess as a consequence of injury, and then the bone diseased is often the parietal. . . . In many cases of cerebral abscess from diseased bone, there is no continuity of disease betwixt the disease of bone and the disease of brain. This is often strikingly seen when disease in the ear gives rise to abscess in the cerebellum. . . . There seem to be two stages in the life of a cerebral abscess. (I speak, I may say, of abscesses limited to the cerebral and the cerebellar lobes, for I never saw an abscess in any of the other parts of the brain.) There is the latent stage and the stage of symptoms.

“Now, it is very important to bear in mind that one hemisphere of the cerebrum, and, I believe, one lobe of the cerebellum, may be extensively diseased—I do not say without symptoms, but without any striking symptoms. If the abscess or any other disease were to affect the convolutions near the left corpus striatum, there would doubtless be symptoms; but, as a matter of fact, I have not yet seen a recent abscess so placed. I say recent, as I think I have seen one case in which there had been suppuration involving convolutions close upon the corpus striatum. It is indeed very significant that abscesses seem to affect parts according to the venous system of the brain, rather than according to the arterial, as cerebral hemorrhage does. . . . It is beyond question certain that a person may have extensive disease of one cerebral hemisphere without any obvious symptoms. It is frequently so with abscess of the cerebral hemisphere. An abscess is sometimes discovered in the head of a patient who has died of some other disease. . . . Many years ago I saw, with Dr. Daniel Tuke, then of York, a dispensary patient, forty-seven years of age, who was nominally under my care for emphysema, but had given up coming to me, who became suddenly convulsed, hemiplegic, and comatose, from, as we discovered at the autopsy, about a week later, rupture of an abscess of one cerebral hemisphere into the lateral ventricle. The nature of the intracranial disorder, in a case of this sort, might be guessed from the fact that the man had fallen on his head three months before; but such information is frequently not forthcoming.

“So then, when symptoms do come on, if they begin suddenly, we may have a difficulty in telling whether the patient was suffering from cerebral abscess or from cerebral hemorrhage. This is even so when there is hemiplegia. When there is not, the difficulty is much greater. When the symptoms begin slowly, the difficulty is greater still; and even when there is disease of bone, as shown, let us say, by an offensive discharge from the nose or the ear, we may be unable to say whether there be meningitis or abscess. . . . We often cannot diagnose abscess of the hemisphere, as disease of this part often produces no symptoms. Nay, in strictness, when symptoms occur suddenly, we can only *infer* cerebral abscess from the fact that there is diseased bone. Then sometimes, as in a case I saw at the London Hospital, cerebral abscess occurs with hepatic abscess. In this case there were cerebral symptoms (convulsive attacks) on the day before death only. In such a case the diagnosis was impossible, as suddenly occurring convulsive attacks no more point to the *nature* of change in the brain, than cough does to nature of change in the respiratory organs.

“When cerebral abscess gives rise to symptoms, it seems to do so in one of two ways. First, by suddenly breaking into the ventricle; and secondly by ‘acting like a foreign body,’ and producing secondary changes in the brain. The first seems to me to be rare. The second I believe to be a commoner one, and is . . . the one which I shall now consider. To say that the abscess

'acted like a foreign body,' is to use an expression which is meant to be quite as much an acknowledgment of ignorance, as to be an expression of anything positive. It is useful, however, as putting the symptoms provisionally in the same category with those which arise from other forms of coarse disease, such as tumours, blood-clots, syphilitic deposits, etc. . . . I believe the woman [whose case forms the text of these remarks] did not die directly of the abscess, but of secondary changes which spread from it, and changes of the same sort occur with other organic disease of the hemisphere. She might have been well now (that is, apparently well), if she had lost twice as much brain as was lost, for we know, as has been several times said, that a patient may exist in at least apparently good health, with very extensive disease of one cerebral hemisphere.

"The commencement of her acute cerebral symptoms was not, I believe, the outward sign of the beginning of the abscess, but of the starting of secondary changes which the formed abscess excited around it. In this case the severe headache may have been the first sign of these changes, and no doubt the changes existed for a while, at least before the convulsive seizure occurred.

"Trephining has been practised for abscess of the cerebral hemisphere, and in one case still under my own care it seems to have been done with success.

"The distinction of two stages also involves the question of reason for operating in cases of cerebral abscess. There are, I suppose, two objects in view in trephining; one being to relieve general pressure by distended abscess, and the other to remove some source of irritation. Now, in this case of abscess of the brain, which was followed by death, I think it quite improbable that the pressure of a mass so small could have given rise to convulsions and to hemiplegia, and, as I think, certainly not to optic neuritis. And as to irritation, I fear this term, although sometimes used as a justifiable verbal artifice, is often nothing more than a metaphysical explanation. I think the general study of the doings of 'foreign bodies' in the brain, leads to the conclusion that changes do ensue of a material nature about the tumour, and that it is to the spreading of these towards the motor tract, and to the optic nervous system, etc., which gives rise to hemiplegia, convulsions, and to amaurosis. As a matter of fact, hemiplegia and amaurosis do occur, with gross disease of the surface of one hemisphere, and sometimes they do not. It seems clear, then, that the local disease is not the cause of these symptoms; but that they depend on changes which the local disease permits or gives rise to."

The next paper is by Dr. HEAD, and describes a "*Case of Irreducible Retroversion of the Gravid Uterus*" in which the operation of paracentesis uteri was performed with a favourable result. The patient was nineteen years of age and six months gone in pregnancy. She had received a blow on the left loin six weeks before her admission to the London Hospital, and a fortnight after the reception of the injury had been seized with intense pain and retention of urine. On admission to the hospital, it was found impossible to introduce a catheter, and all efforts to restore the uterus to its proper place resulted in failure, even when the patient was under the influence of chloroform. The uterus was then punctured with a trocar introduced through the rectum, about twelve ounces of liquor amnii following the instrument when it was withdrawn. The patient aborted in the evening of the following day, and after a not very severe attack of peritonitis, made a good recovery.

Following Dr. Head's interesting paper, is one by D. DEBERDT HOVELL, "*On Neurosis from Moral Shock*." This article contains several poetical quotations, which, when we mention among the authors names, Shakspeare and Byron, our readers will be prepared to believe are very good reading. Mr. Hovell is in error in supposing that the lamented author of Endymion was really killed by the sarcasm of the *Quarterly Review*; for, in the words of the editor of Murray's large edition of Byron, "All the world knows now that he died of consumption and not of criticism."

In the next paper the question "*Can an Inguino-Scrotal Hernia be reduced en masse?*" is ably discussed by JOHN COOPER, F.R.C.S. The case which forms the text of this paper clearly shows, in the words of the author, "how a sac may be slowly detached from the scrotum and transferred to an intra-parietal posi-



tion without violence, without rupture of connective tissue, and, therefore, without ecchymosis or inflammation. It also shows how the last portion of this sac may finally have so loose an attachment with the scrotum that it may be quickly transferred, with its contents, through the inguinal canal, to be lost in the intraparietal sac, and may thus give rise to the phenomena of reduction *en masse* as understood by Le Bran (Qu. *Le Dran*?) and others."

Mr. COUPER next gives a case in which a calculus was extracted through a vesico-vaginal fistula, the latter being subsequently closed by operation. The case is of much interest and is well told.

In a third paper Mr. COUPER recommends the use of a flexible probe-pointed rod of gutta-percha, as a guide for the introduction of the tracheotomy tube in cases complicated with great swelling of the neck.

Mr. L. S. LITTLE, F.R.C.S., contributes "*Cases of Cholera successfully treated by Saline Injection into the Veins, and Autopsies of Cases unsuccessfully injected, with Remarks.*" The cases of recovery were two in number; in the first, the patient (a boy of six years) recovered rapidly after one injection, while in the other, the patient, who was a girl of seventeen, seven months gone in pregnancy, required two injections (the saphena vein being employed as well as the median-basilic) and only became convalescent after premature delivery and a severe attack of pyæmia. In a third case, recorded in the last volume of the Reports as convalescent, death followed ten days subsequently from ulceration of the throat and mouth, caused or at any rate aggravated by the large amount of calomel (nearly an ounce) which had been administered, through a mistake of the "sister" who had charge of the patient.

"All experience," says Mr. Little, "demonstrates the necessity for repeated injections; and this fact I beg to impress on any one adopting the treatment of cholera by the introduction of fluids into the veins."

We next find an elaborate and carefully prepared paper called "*A Report on the Morbid Anatomy of Cholera as observed at the London Hospital during the Epidemic of 1866.*" by HENRY B. SUTTON, M.B. The author's summary, founded on the notes of over fifty autopsies, seems worthy of attention, and we, therefore, quote it in full:—

"I may now conclude this report by remarking that the morbid appearances, when death had taken place in the cold or collapse stage of cholera, may be briefly summed up as follows: In a large majority of cases the left ventricle was found contracted, empty, or almost empty, and the right side was found much distended.

"The serous cavities of the pleuræ and pericardium contained very little or no fluid.

"The lungs weighed very much less than normal. In some cases they were very pale in their anterior two-thirds, and of a darker colour in their posterior third. The pale portions, on exposure to the air, rapidly became of a scarlet colour. In other cases the lungs throughout were of a dark red colour; but both the pale and the dark-looking lungs were dry, and on pressure gave out very little blood. Dark, thick blood was seen flowing out of the branches of the pulmonary artery. The lungs were often collapsed. The liver was, on section, often paler than natural, and the lobular structure was indistinct. It was common to see bile in the hepatic ducts. The gall-bladder always contained a quantity of dark, thick bile. The spleen weighed very much less than normal, and was usually pale and firm.

"The kidneys.—The stellate veins were well marked; the cortical portions were often very pale, and the medullary of a pale claret colour.

"The intestines.—The mucous membrane, where there was nothing but rice-water in the intestine, was, in the majority of cases, very pale, or healthy-looking. In imperfect reaction the mucous membrane was highly congested.

"The bladder was contracted and empty.

"In reaction the morbid appearances were the reverse of those of collapse.

"The lungs were congested, and in some cases there was red hepatization; in one case gray hepatization, with purulent infiltration. The bronchial tubes in some cases contained pus and puriform mucus.

"The kidneys were healthy-looking, or congested, and in some cases passing into the condition known as Bright's disease.

"The intestinal mucous membrane was often congested, granular and denuded of its epithelium; and in a few cases there was ulceration in the upper portion of the large intestine.

"The bladder usually contained more or less urine."

In the next paper Mr. ROBERT K. DEBENHAM describes an ingenious whale-bone fillet, which he has devised for facilitating lingering labors. Two woodcuts are given to illustrate the application and *modus operandi* of the instrument.

The statistics of major operations performed in the hospital during the year 1866, come next in order. These statistics, which are compiled by Mr. MAUXDER, are quite elaborate, and merit careful study at the hands of practical surgeons.

A sufficiently full and apparently accurate index concludes the volume.

From the analysis which we have offered of the various papers, our readers may rightly infer that the volume as a whole is of considerable value. Some of the contributions indeed are of the very highest order of merit. The fact to which we alluded in our introduction, that more than a quarter of the whole was from one pen, and another fact which may be observed from looking over the names of hospital staff, viz., that not a line has been contributed by any of the three physicians, are sufficient, we think, to account not only for the tardy appearance of the book, but likewise for its containing an unusually large amount of matter which (though well enough in itself) is not appropriate in a collection of hospital reports. This we think an error of judgment on the part of the editors; we would rather have sacrificed the thickness of the volume, to secure a better selection of material. The question is between having to drink a small glass of choice wine, or a quart measure of weak sangaree; for ourselves we prefer our *supernaculum* undiluted.

The long interval since the appearance of the previous volume has not been spent in revising proofs for this, for it contains an unusually large number of verbal errors and misprints.

J. A., JR.

ART. XXVI.—*St. Andrew's Medical Graduates' Association Transactions*, 1867. Edited by LEONARD W. SEDGWICK, M.D., Hon. Secretary. 8vo. pp. 252. London: John Churchill & Sons, 1868.

THE objects of the St. Andrew's Medical Graduates' Association are, "The advancement of the science and art of medicine, and of general science and literature, the maintenance of the interest of the medical graduates of the university, and the cultivation of social intercourse and good fellowship;" and "to urge upon the government of their country in such manner as they may deem most expedient, the claims of the medical graduates to a vote for a representative in Parliament of the University of St. Andrew." In regard to a representative in Parliament their claims have been allowed, and the medical graduates of the University of St. Andrew have now the same rights in this respect as those of any of the other universities of Great Britain.

The President, Dr. B. W. RICHARDSON, has chosen as the subject of his inaugural oration, "Research in Medicine." Coming as it does from one who is so well known by his writings in this country, it is hardly necessary to say that it is distinguished by its elegance among productions of a similar kind.

*Report on Ozone.* By H. DAY, M.D., M.R.C.P.

This report gives a very full idea of the existing state of knowledge on this subject. The history, mode of production, tests, physical properties, physiological action of ozone, the morbid phenomena produced by it, and its action on organic compounds are all distinctly stated. The tests for the presence of

ozone in the atmosphere Dr. Day regards as extremely unsatisfactory, as the test papers in general use, prepared with iodide of potassium and starch, are changed in colour by other substances occasionally present in the air, *e.g.*, nitric acid and carbonic acids. It has occurred to him that probably a delicate test for ozone might be found by observing the effect produced by the electric spark when passed through rarefied ozonized air. As different colours are produced by passing a spark through different vapours, so the colour of the spark, when passed through rarefied ozonized air, should be compared with the colour of the spark when passed through rarefied common air contained in the same vessel. The author's conclusion relative to the properties of ozone, either as a cause of disease, a remedy for disease, or preventive of disease, will be found in the number of this Journal for July, 1868, p. 262.

*Report on Disinfectants.* By WILLIAM PROCTER, M.D., F.C.S.

Disinfectants are divided by Dr. P. into two classes :—

1st. Those which, by oxidization, rapidly effect the decay of organic substances.

2d. Those which act by preventing any change in the original composition of the substance.

The first class Dr. P. regards as the disinfectants proper; the second are more correctly named antiseptics, or colytics. A third class might be added, called fixatives, since one or more of their constituents, by entering into combination with the offensive volatile agents, fixes them, and prevents the pollution of the air by their escape. The deodorizers he does not regard as necessarily disinfectant, for there is no evidence to show that infectious disease is of necessity associated with odorous matter.

Of the colytics, Dr. Procter prefers carbolic acid, either in the crystalline form or in the impure liquid solution, which is cheaper, and will generally be found sufficiently efficacious. A saturated solution of carbolic acid will destroy plants rapidly, and leeches and fishes die in it, and on exposure to air their bodies dry up without putrefaction; it makes turbid weak (but not strong) solutions of gelatine, and coagulates albumen. A one per cent. solution will retard saccharine fermentation, while a two per cent. solution stays it; but a solution of one part in a thousand has no effect on the metamorphosis. Flesh putrefies in a liquid containing one part of carbolic acid to 300 of water, but is completely preserved by one part to 60 of water. The preservative power does not appear to be due to its power of coagulating albumen, for a solution which will not produce coagulation of albumen will sometimes prevent putrefaction.

Among the disinfectants iodine is to be preferred, in consequence of its ready portability and of the ease of its application. A small amount exposed in a saucer will evaporate sufficiently to disinfect a sick chamber, and by the application of a regulated heat the evaporation may be increased at will.

*On Meteorology in Relation to Epidemic and Sporadic Cholera, and Observations on Osmose, with Practical Deductions.* By T. MOFFATT, M.D., F.R.A.S., F.G.S.

From results of observations taken during the cholera epidemic in 1853, Dr. M. formed the opinion that there was an intimate connection between the increase of cholera and the diminution of the amount of ozone in the atmosphere. Increase in the number of cases of cholera was also observed whenever the readings of the barometer were high, and when the winds were in the north points of the compass. During the months from June to December, 1866, a cholera epidemic occurred, and Dr. Moffatt had an opportunity of verifying his former observations, for the same facts were again noticed. Under these circumstances he naturally determined to try ozone as a disinfectant, and for purposes of disinfection he says it is sufficiently well made by the action of phosphorus on the atmosphere. All the cases which came under his notice occurred in nine houses. In six of the houses carbolic acid and Condy's disinfectant were used, and in four of the six there were more than one case of cholera; in the three others, in addition to these disinfectants, ozone was used, and one case only occurred in each house. The number of experiments is, of

course, too small to allow us to draw any general conclusions, but it is sufficiently great to justify us in the farther use of ozone. His experiments with ozone during the cattle plague were more extensive and therefore more valuable. His observations were made upon 267 stocks, consisting of 2783 animals. He says: "Of the stocks that were not disinfected, 51.8 per cent. were diseased, and 11.3 cattle died weekly. Of the stocks that were disinfected, 27.2 per cent. were diseased, and 9.0 animals died weekly. Taking the percentages of the cattle, we find, of those that were not disinfected, 70.0 per cent. were diseased, and 56.8 per cent. died; while of those that were disinfected, 40.0 per cent. were diseased, and 33.0 per cent. died."

Dr. Moffatt also found that in those counties of England where the amount of ozone is normally large, the cattle plague was less prevalent and less fatal than in those where it exists in less quantity.

*Septicæmia: without and with purulent deposit (Pyæmia).* By A. WYNN WILLIAMS, M.D.

Dr. W. prefers the name septicæmia to that of pyæmia, as he regards pus as simply an accidental product of the disease, which he thinks is caused by the absorption of some of the gases evolved by the decomposition of pus, as phosphuretted and sulphuretted hydrogen. In fact, the symptoms of septicæmia and its post-mortem appearance so closely resemble those which are produced by poisonous doses of phosphorus, that it is probable that the former of these two gases is the active agent in the production of this affection. A further confirmation of this view is found in the fact that septicæmia is a very common attendant upon caries of the bones, in which condition a large amount of phosphuretted hydrogen is probably generated. In various diseases septicæmia may be produced, and be the cause of typhoid symptoms, while on the other hand, if a free exit to all the products of decomposition be provided, or their absorption prevented by the action of disinfectants, it is not necessarily an accompaniment of any disease. Carbolic acid is a good disinfectant, but to iodine, from the ease with which it may be applied, preference is given. When it is applied to a wound, the tincture mixed with water, and covered with an impermeable cloth, to prevent the escape of the vapour, may be used; the heat of the body vaporizes the iodine, which then permeates the tissues. In this way the contents of even fetid abscesses may be rendered inodorous.

Dr. Williams furnishes even more convincing proof of its efficacy, in the fact that putrid pus mingled with it may be injected into the bodies of the lower animals without producing any serious results. In one of the experiments, broken-down tuberculous matter mixed with iodine was used; although the Guinea pig escaped septicæmia, it succumbed to phthisis three months later, showing that iodine had no power to destroy the specific character of tubercle.

*On the Use of the Sulphite of Potash.* By J. F. NICHOLLS, M.D.

Dr. N. has tried the sulphites in a number of diseases, and has formed a favourable opinion of their powers. Among the diseases treated by him are mentioned primary and secondary syphilis, variola, and typhoid fever. Thirty-five cases of the last-named diseases were so treated, and of this number only one proved fatal, and this was the case of an infant 14 months old, who had been suffering from diarrhœa from dentition for two months before the attack of fever. The cases were, of course, of different grades; but eight were of great severity. As the average mortality in typhoid fever is stated by Dr. Nicholls to be one in six, he is disposed to think that the sulphite of potassa was of service in the treatment of these cases; more especially as in a prison only 200 or 300 yards distant from the row of houses where his cases occurred, there were two deaths in ten cases.

*On Tuberculous Affections in Man and in the Lower Animals, in relation to their supposed Zymotic Nature.* By EDWARDS CRISP, M.D., M.R.C.S., L.A.C.

Dr. C. does not think that the production of phthisis from the inoculation of tuberculous matter proves the contagiousness of tuberculous disease, for the same conditions have been produced by experimenters who have used other

substances; thus Mr. Colin produced tuberculous deposit in rabbits by inoculation with verminous false tubercle of sheep, and Cruveilhier and others succeeded in inducing tubercle by the injection of quicksilver into the veins, a result which also followed the experiments of Drs. Sanderson and Wilson Fox, who used either vaccine lymph or putrid muscle. It will be recollected that Niemeyer cautions us against vaccinating those who are predisposed to serofula.

For many reasons which he gives, Dr. Crisp is not inclined to place phthisis among the zymotic diseases, and thinks that in most cases it will be found to be hereditary; but bad diet or bad air will frequently act as exciting causes, and these causes are especially potent among birds, reptiles, and mammals which are kept in confinement. "Many animals," he says, "have the lungs tuberculated, and the other viscera in a normal condition; others have the tubercular deposit only in the spleen, liver, or intestines, whilst in some the liver and spleen are both implicated." This paper is illustrated with a plate.

*An Essay on Some Disputed Points in the Nature and Antecedents of Phthisis.* By CHARLES R. DRYSDALE, M. D., etc. etc.

This paper is written for the purpose of proving the inoculability of phthisis.

*Cases of Diseases of the Nervous System in Patients the Subjects of Congenital Syphilis.* By J. HUGHLINGS JACKSON, M. D., &c. &c.

Dr. J. attaches much importance to the peculiar deformity of the teeth which is seen in the children of syphilitic parents, and to which attention was directed by Mr. Hutchinson as a symptom of congenital syphilis. In some cases where the malformation is not present in the subject of the nervous disease, it will be found, he says, to exist in some other member of the same family, for it is by no means infrequently the case that the eldest of a family alone exhibits this deformity. Of course, if along with it be found the nebulous condition of the cornea, also described by Mr. Hutchinson, the diagnosis is almost positive.

Among the diseases which may be caused by congenital syphilis are chorea, hemiplegia, epilepsy, amaurosis, and convulsions. In alluding to hemiplegia of a syphilitic nature, he says:—

1. "It follows a lump of syphilitic disease of the cerebral hemisphere, distinct from the motor tract, as it follows other sorts of lumps similarly placed.

2. "As already stated, it is sometimes the result of blocking of the middle cerebral artery, the coats of which are already affected by syphilis, and then the hemiplegia is analogous to that caused by plugging from heart disease. For in each the change on which the palsy depends is softening of the corpus striatum.

3. "It may be the result of a syphilitic nodule which has grown in the motor tract itself, as other sorts of nodules do."

Dr. Jackson is inclined to think that it most frequently depends upon the second of these causes, and it will be remembered that he has written a paper (*London Hospital Rep.*, vol i. p. 459; *vide* also Quarterly Summary of this number of this Journal) in which the attempt is made to prove that chorea depends upon embolism of one of the branches of the middle cerebral artery.

*Cases of Diphtheria saved by Tracheotomy; with Remarks on the Operation.* By GEORGE BUCHANAN, A.M., M.D.

Dr. B. is an earnest advocate of tracheotomy in diphtheria, where death seems to be imminent from suffocation; he does not recommend the operation in these cases of the disease where the patients seem to be sinking from asthenia or from blood poisoning. During seven years Dr. Buchanan has been called to 40 cases as an operating surgeon; in 31 cases the operation was performed; of those who had been operated upon 11 recovered, while all of those not operated upon died.

In the discussion which followed the reading of this paper, Dr. Davcy stated that he knew of two deaths which were attributable to the use of Marshall Hall's tracheotome, and Dr. Crisp advised snipping out of a portion of one of the tracheal rings, as the tube is so liable to become obstructed. Dr. Williams said that the application of a solution of tannic acid to the false membrane, by means of the spray-producer, would tan the membrane and lead to its expulsion from the throat.

*Fistula in Ano healed by Ligature.* By DRAPER MACKINDER, M.D., F.R.C.S.E.

This contains the report of a successful operation for fistula in ano, in which a wire ligature was used.

*A Case of Gastrotomy for Extra-Uterine Pregnancy, with a Table of Thirty-two Cases of Recorded Gastrotomy.* By D. LLOYD ROBERTS, M.D., M.R.C.S.L.

To a report of a case of gastrotomy is appended a table containing the reports of 32 cases of extra-uterine pregnancy in which gastrotomy was performed. 15 of these cases terminated in recovery, nearly 50 per cent., while in only three cases were the children saved, and in only one both mother and child. Experience has demonstrated that all attempts to save the child have been useless, and that the operation had therefore better be postponed until after the excitement inseparable from labour has subsided. In one of the cases there were twins. Two plates accompany this paper.

*Case of Placenta Prævia; Rapid Expulsion of Placenta and Membranes Entire.* By JOS. SMITH, M.D., M.R.C.S.

This is the history of a case of placenta prævia, in which the principal interest seems to be in the fact of the rapid expulsion of the contents of the uterus, and the saving of both mother and child.

*Notes on Ergot of Grasses.* By R. UVEDALE WEST, M.D., M.R.C.S., Edin.

In this paper are mentioned two cases in which abortion in grazing animals had been produced by their eating grasses which were more or less affected with ergot.

*The Electricity of the Blood considered in its Relation to the Processes of Digestion and Absorption of Chyle. The Testimony afforded by the Spectrum Analysis as to the Cause of the Red Colour of the Blood, and a Review of the Electric Character of some of the Principal Functions of Animal Life.* By RICHARD SHUTTLE, M.D., M.R.C.S., L.S.A., etc.

The object in writing this paper, the author tells us, "is to draw attention to my experiments proving the electric character of the arterial blood, that such experiments may be repeated and investigated by competent persons. \* \* \* \* In attributing the phenomena of animal life to continuous currents of electricity never ceasing without a corresponding cessation of the functions of life, I have, as precisely as possible, defined the nature of animal life, and thereby have opened out a vast and most interesting field of research, the important bearing of which upon the scientific study and practice of medicine, cannot in my opinion be over-estimated."

*On the Detection of the Alkaloids by the Microscope.* By LEONARD W. SEDGWICK, M.D.

The test for the alkaloids introduced by Helwig in Germany, and Dr. Guy in England, that is, by sublimation, Dr. Sedgwick distrusts, for the following reasons:—

1st. A careless application of heat will sometimes reduce the alkaloid to a harmless mass of charcoal.

2d. In no case can the whole amount of the substance undergoing sublimation be collected. Some of it escapes or is lost.

3d. Perfect crystals are very rarely obtained, and it is, therefore, often impossible to say to what substance the crystals belong. For instance, the crystals obtained from the sublimate of *cocculus indicus* do not differ from those of morphia. Dr. Sedgwick suggests as tests the iodo-sulphates which produced crystals with the alkaloids. The test is to be applied in the following manner, viz.: "The alkaloid is to be dissolved in alcohol or acetic acid slightly acidulated with dilute sulphuric acid; a portion of this solution is to be placed on a microscopic slide, and a minute drop of an alcoholic solution of iodine added. At first there will be mutual repulsion, but by and by, assisted by different positions of the slide, they will mix; if there is much fluid after it has spread over the surface of the glass, it is well to pour off the super-abundance on to a

second or even a third slide. In a few seconds, as evaporation goes on, the crystals will form." Among the specimens exhibited were sulphate of iodo-morpha, of iodo-codeia, of iodo-strychnia, and iodo-atropia.

*On Rigor Mortis.* By BENJAMIN W. RICHARDSON, M.D., F.R.S., etc.

There is a predominating idea that cold hastens while heat retards the occurrence of rigor mortis. This idea Dr. Richardson attributes to the fact that heat produces as one of its most striking effects, fluidity of solid substances, flexibility and softness. Dr. R. has, however, observed that if water at the temperature of 110° Fahr. be injected into the arteries of a recently dead animal, there is quickly developed rigor mortis; and that water heated to 115° Fahr. will not be able to pass the contracted capillaries. Very similar results are obtained if the animals be exposed to a heat of 110° Fahr. in a sand bath, the rigidity in this case coming on in 15 minutes. If, on the other hand, water, reduced to the temperature of 18° Fahr., by the addition of nitrate of ammonia, be injected into the arteries of a recently killed rabbit, the injection will flow easily and be followed by the instant relaxation of the muscle, and the same effect will be produced if the animal be frozen, either by being placed in ice or subjected to the spray of ether. If a rabbit be placed on one side in the sand bath, while the other side is covered with ice, rigidity will be noticed on one side and relaxation on the other.

Coincidentally with these observations a chemical change of great interest was also noticed. With the occurrence of rigidity the reaction of the muscle became acid in consequence of the development of lactic acid in the muscle. For acidity in a living muscle to be produced, it is necessary that the contraction of the muscles should be long sustained without relaxation, a condition which is not frequent; it would not be produced where there was an alternation of relaxation and contraction. Dr. Richardson closes this admirable paper with the following conclusions:—

"1. Rigor mortis will always be more quickly developed when the temperature of the day or night is high, or when the dead body is well covered.

"2. When, from any excess or accumulation of energy in a living muscle, rigor of a persistent kind is induced in that muscle, there will follow the same changes as in the dead muscle, viz., development of an organic acid. Hence, in muscles affected with rheumatic affection, there is a direct cause for the development of such acid.

"3. The cause of rigor mortis is the coagulation of the muscular fluid—muscle-fibrin—and the excitant to the coagulation is heat. In brief, the force exhibited during life in the phenomena of voluntary and involuntary muscular motion, in the raising of water from the body, evaporation, and in the secretion, is exhibited, on the arrest of these phenomena, in coagulation of blood and muscle. Thus rigor of muscle and coagulation of blood are truly the last evidences of the phenomena which in their totality we call life."

*On a New Apparatus for the Administration of Narcotic Vapours.* By F. E. JUNKER, M.D.

The peculiarity of the administration of an anæsthetic by this apparatus is that air is forced through it by means of Richardson's hand-ball bellows, and that the anæsthetic is not evaporated immediately in front of the patient's mouth. Chloromethyl is the anæsthetic preferred, and, when administered by means of this apparatus, Dr. Junker has succeeded in producing complete anæsthesia in about five minutes, from the evaporation of from three to five drachms. Appended to the paper is a table and some observations on the variations of the pulse and respirations during the anæsthesia from the bichloride of methylene.

J. H. H.

- ART. XXVII.—1. *A Treatise on the Diseases of the Eye.* By J. SOELBERG WELLS, Professor of Ophthalmology in King's College Hospital, and Assistant Surgeon to the Royal London Ophthalmic Hospital, Moorfields. Philadelphia: Lindsay & Blakiston, 1869.
2. *Illustrations of some of the Principal Diseases of the Eye, with a Brief Account of their Symptoms, Pathology, and Treatment.* By HENRY POWER, F.R.C.S., M.B. London, Surgeon to the Royal Westminster Ophthalmic Hospital, Assistant Surgeon to, and Lecturer on Physiology at, the Westminster Hospital. London: John Churchill & Sons, 1867.
3. *A Manual of the Diseases of the Eye.* By C. MACNAMARA, Surgeon to the Calcutta Ophthalmic Hospital, Professor of Ophthalmic Medicine and Surgery in the Calcutta Medical College. London: John Churchill & Sons, 1868.

THESE three works may be regarded as exhibiting the existing condition of ophthalmic medicine in Great Britain, and we had hoped to be able on this occasion to present an elaborate review of their contents, so as to make known to our readers the great advances made of late years in ophthalmic science. In this we have been disappointed, and all we can attempt now is to briefly indicate the peculiar characteristics of these volumes, and must postpone to a future opportunity the fuller consideration of the subject.

The authors of the above works are manifestly thoroughly acquainted with all the advances made in the science in Germany, and have had ample opportunities, by extensive personal experience in large public hospitals, of testing the value of the various modes of treatment, operative procedures, and methods of diagnosis which have been introduced in modern times. It would be most interesting to compare the different results at which such enlightened and experienced practitioners have arrived in regard to various points *adhuc sub judice*, and this we hope to do on a future occasion.

1. Of the three works before us that by Mr. Soelberg Wells is by far the most elaborate and complete, and must become the favourite guide of American as well as English practitioners. It is written in pure and intelligible English, and will be read not only with profit, but with pleasure.

In his preface, Mr. Wells states that, "whilst I have endeavoured to enter fully into all the most important advances which have been lately made in ophthalmic science, I have not contented myself with simply recording the views of others, but have sought in most instances to make myself practically conversant with them; so that I might be able, from my own experience, to form an independent and unbiassed opinion as to their relative value. The vast and peculiarly favourable opportunities which I have had at Moorfields of studying all phases and kinds of eye-disease, as well as the great benefit which I have enjoyed of witnessing the practice and operations of my colleagues, have most materially assisted me in the possibility of doing this.

"In preparing this work, I have steadily kept one purpose in view—viz., to make it as practical and comprehensive as possible; and I have, therefore, entered at length into an explanation of those subjects which I have found to be particularly difficult to the beginners."

Mr. Wells has performed the task he has undertaken with judgment and skill, and his "Treatise" will be regarded as the most complete and reliable one on the subject in our language, and it must now fill the place formerly occupied by the classic works of Lawrence and Mackenzie.

The volume is illustrated by over one hundred wood-cuts—and the number might have been increased with advantage—and by sixteen excellent coloured ophthalmoscopic-figures, copies of some of the plates of Liebreich's admirable *Atlas d'Ophthalmoscopie*.

2. The volume by Mr. Power is less comprehensive in its scope than the one just noticed, but its author has treated the subjects therein discussed with intelligence and ability. He has examined the merits of the doctrines now



taught in Germany by the light of his extensive experience in the Royal Westminster Ophthalmic Hospital; and in his appreciation of the various modes of treatment now in vogue, he displays a sagacity and independence highly creditable to him.

On some points, in regard to the anatomy and physiology of the eye, the reader will find much interesting information, which he may not readily obtain elsewhere.

The volume is illustrated by wood-cuts and diagrams, and by twelve chromo-lithographic plates, each containing six figures. These last, though fairly executed, are not all that could be desired. Indeed, the author candidly admits this, for he states that, notwithstanding the excellence and ability of the artists employed by him, he found that "chromo-lithography was scarcely capable, without an expenditure totally disproportionate to the end in view, of expressing the fine shadings of colour which enable the practised eye to distinguish various yet similar forms of disease."

3. The object of Professor Macnamara, in the preparation of his *Manual*, was "to place before the student and medical practitioner an account of this branch of surgery as practised by ophthalmic surgeons at the present time." He has "endeavoured fully to describe the symptoms and treatment of the various diseases of the eye, rather than to attempt a complete discussion of their pathology; because the scope of this work precludes his doing justice to the subject;" and thus he thinks he may be able to impart that knowledge to others which a special study of the subject, and the command of a large ophthalmic hospital, have afforded him the opportunity of acquiring.

"As a general rule," he says, "I have been obliged to confine myself to a description of the various plans of treatment which my own experience has taught me to be the most useful in each particular class of cases."

Professor Macnamara has most satisfactorily executed the labour he undertook, and has furnished a handy-book which will be convenient and useful to students and practitioners.

When we state that the work is gotten up in the Messrs. Churchill's best style, we need add nothing further on that point. In addition to fifty-two well-engraved wood-cuts, it is illustrated by fifteen plates, thirteen of which are coloured, and contain three figures each. These last are copied from Dalrymple, Sichel, and Liebreich, and are artistically executed.

It will be perceived that each of the works under notice has its own scope and object; and that its author has ably and fully accomplished all that he undertook.

In thus expressing so favourable an opinion of these works, we would not be understood as endorsing all their teachings, or as conveying the idea that there is nothing in them to criticize. Were we to enter into a critical examination of them, we fear we should be obliged to express dissent from some of the doctrines inculcated. At present, we shall content ourselves with calling attention to the hasty endorsement, as our experience—and it has not been very limited—leads us to believe, of the too free and indiscriminate use—derived from the German school—of atropia in a multitude of cases; the far too frequent repetition of local applications to the eyes; and the unqualified recommendation of some operative procedures which require to be tested by further experience before being accepted as entitled to entire confidence.

#### ART. XXVIII.—*Transactions of State Medical Societies.*

1. *Transactions of the Medical Society of the State of Pennsylvania at its Nineteenth Annual Session held at Harrisburg, June 1868.* 8vo. pp. 255.
2. *Transactions of the Medical Society of New Jersey for 1868.* 8vo. pp. 196.

1. THE nineteenth annual session of the Medical Society of Pennsylvania was opened by the President, Dr. Traill Green, of Northampton, in a very able address on the exalted office assumed by the physician, and the extensive amount

and varied character of the acquirements which are necessary to enable him to perform faithfully and successfully the duties incumbent upon him.

In the volume before us, preceding the report of the president's address is the draft of a memorial to the legislature, setting forth the number and condition of the insane within the State of Pennsylvania, and the urgent necessity there exists for more extended means for their proper care and treatment; with the draft, also, of an act for the establishment of an additional State Asylum for the insane, for the passage of which the legislature is earnestly petitioned on behalf of the State Medical Society.

But few reports in reference to the sanitary condition of the different sections of the several counties of the State and the character of the diseases which prevailed during the twelve months preceding the month of June 1868 were received, and even of these few, the majority are superficial and incomplete.

In nearly every report the absence of any severe and wide-spread epidemic is noticed, as also the comparative rareness, generally speaking, of the endemic and sporadic diseases usually encountered within the different districts of country that were heard from, and when they did occur, their extreme mildness and easy management. Paroxysmal fevers appear to have prevailed to only a slight extent in the city of Pittsburg and its neighbourhood, the only portions of Alleghany County of the sanitary condition of which any account is given. In Berks County, we are told, that late in the summer fever of a remittent character made its appearance at Reading, and continued to prevail until mid-winter. Its cause, though not very apparent, may, perhaps, the "Report" says, be found in the long-continued wet weather of the early summer, and the subsequent decay in autumn of the luxuriant vegetation; to which may be added, the large quantity of new soil exposed in consequence of the improvements in progress in different parts of the city. Dr. Nagle reports some interesting cases of engorgement of the liver, which were developed during the progress of the fever, accompanied by enormous distension of the abdomen. In all these cases large doses of calomel (10 to 15 grs.) were given, followed by castor oil and turpentine. This treatment produced a large discharge of dark bloody fluid, followed by smaller discharges of a like character; these discharges were followed in every instance by entire relief from the unpleasant symptoms and speedy convalescence. Similar cases are reported by Drs. Brooke and Kalbach, by whom the same treatment was pursued.

In the report from Bradford County it is stated that as far as<sup>†</sup> the committee who prepared the report had been able to learn, epidemic diseases have, for the last and several preceding years, been comparatively of rare occurrence. In the western part of the county, during the summer, there were observed several sporadic cases of bilious remittent fever, which were generally preceded by a slight bilious diarrhœa. Some cases assumed a typhoid form, and two cases under the care of Dr. Rockwell were attended with a copious hemorrhage from the bowels.

The report from the Columbia and Montour County Medical Society states that the diseases of those portions of the State were such as usually prevail in other malarious regions. The other diseases, at times, assume an intermittent form; cases which ultimately assumed the typhoid form in their commencement had all the characteristics of bilious remittent fever. This has been especially the case in Danville since a great flood which occurred in 1865. Many of the cases were severe and protracted, running on to the third or even the sixth week, the termination, however, was usually favourable.

In the report from Cumberland County, though no direct reference is made to the prevalence or non-prevalence of fevers of an intermittent type, we have the following interesting remarks as to the influence of soil on the character of the diseases generally. "The prevailing type or character of our diseases is almost universally of the asthenic order, and consequently, though prevailing mildly, they incline more to the nervous than to the bilious or congestive forms. This is especially so in the limestone region, except when modified by malaria or other local causes. The same remark is true, also, to some extent, of the diseases as they occur in the silicious sandstone region; here they incline a little more, however, to an inflammatory character, while, again, in the slate or soft water

region, they are more likely to develop into a subacute inflammatory or passive congestive form, or to linger on through a mild typhoid course."

In the report from Erie County, it is stated that, since the construction of the Erie extension canal, about the year 1840, there has been a gradual increase of bilious remittent fever in its neighbourhood, and from that time dates, also, as in other parts of the State, a less sthenic character of diseases generally. That this increase of bilious fever is not more marked in a city like that of Erie situated on a land-locked bay into which is constantly poured the water of a canal loaded with miasm from the swamps through which it passes, as well as that generated by itself in its progress to Lake Erie, can be attributed only to the influence of the fresh air of the lakes, and the thorough draining of the surrounding region situated in so high a latitude. As compared with the bilious fevers of the Susquehanna, those of the lake shore are short in duration and free from malignancy.

In the report from Perry County, Dr. Ritter of Liverpool, remarks that this town, which stands upon the Susquehanna River, and where intermittents and remittents formerly prevailed exclusively, has of late been to a remarkable degree free from the occurrence of these fevers. It is true, he adds, cases of the several forms of paroxysmal disease occurred during 1867-8, but of a far milder character than what they presented formerly.

In the report from Schuylkill County we are told that only a few cases of intermittent and remittent fevers occurred during the twelve months preceding the date of the report, and these were of a mild, easily managed character.

No mention is made of the prevalence of paroxysmal fevers in the reports from Beaver, Cumberland, Dauphin, Luzerne, Montgomery, or Northampton.

Judging from the general tenor of the several reports received at the last session, we are inclined to believe that even with the confessedly small amount of disease met with during the twelve months preceding June 1868, cases of typhoid fever prevailed throughout every portion of the State, differing, however, in number and severity in different localities, and, also, that all the diseases which occurred assumed a more or less decidedly adynamic character.

In the report from Alleghany County, in respect to the city of Pittsburg, it is remarked that the amount of rain was less during the summer and autumn of 1867 than for several preceding years, the winter which followed being remarkable for its severity. The financial struggle which occurred at the same time with these meteorological conditions, deprived a large number of operatives of a sufficient means of support for themselves and families, and thus reduced them to a state of extreme destitution, causing them to crowd together in badly ventilated, filthy apartments, inadequately warmed during the inclemency of winter. To these causes are referred the large increase in the city of Pittsburg of the class of diseases usually denominated zymotic. The whole number of deaths that occurred in Pittsburg during the year 1867 amounted to 1041; of these 69 were from typhoid fever.

In the report from Berks County it is stated that a few cases of typhoid fever occurred in Reading, and in other parts of the State. In some instances the disease commenced as an ordinary remittent, gradually assuming the typhoid form during a very protracted course. Dr. E. R. Sholl reports five cases of loss of speech occurring, in each instance, about the fourth week of the fever, and continuing for a period of eight or ten days.

We learn from the Bradford County report that typhoid fever was almost entirely unknown throughout the county, during the twelve months preceding June 1868. In Sylvania Dr. E. G. Tracy reports some six cases of the disease as having fallen under his care.

The Columbia and Montour County Society report the occurrence of typhoid fever, especially of the form which assumes in its earlier stages the characteristics of bilious remittent fever.

It is stated in the report from Cumberland County, that typhoid fever occurred to a limited extent throughout the year, commencing with symptoms of a bilious or intermittent form, which, in most instances, yielded very readily to purgatives and quinia. After the febrile intermissions gave way the typhoid symptoms made their appearance.

In Dauphin County typhoid fever is reported to have occurred quite frequently during the twelve months preceding the date of the report. To one locality the disease is said to have been endemic.

The report from Erie County informs us that typhoid fever may be said to be the endemic of the lake shore, not, however, being remarkable for the number of cases which occur, nor for its severity or mortality. It is protracted in many instances to the twenty-ninth day. In general, however, its hebdomadal crises are usually clearly and distinctly marked, with a steady improvement from the fifteenth day.

In Indiana County, Dr. Virtue reports that typhoid fever prevailed as an epidemic within the bounds of his practice, but in a very mild form; out of a great number of cases treated there occurred but one death.

In the report from Northampton County Dr. Breinig states that a sporadic case of typhoid fever was treated in November, and one in December, 1867. During the first two months of 1868 no case occurred. In March the fever again made its appearance, when a single case occurred; in April there were five cases; and in May eight. At the date of the report the disease was on the decline, no new cases having occurred from the first of June. The disease was closely confined to the base of the South Mountain.

In Perry County typhoid fever prevailed to only a slight extent. In Schuylkill, Dr. J. F. Carpenter, of Pottsville, remarks, that, typho-malarial fever was quite frequently met with in November and December, 1867. Two cases out of seven, in his practice, proved fatal—one of these was brought home from a distance in a moribund condition.

The so-called spotted fever does not appear to have prevailed to any extent during the summer, autumn, and winter of 1867, and the spring of 1868. Mention is made of it in only two or three of the reports. In the report from Beaver County it is stated that an epidemic of spotted fever prevailed in the centre of the county, during the months of February and March. It appears, however, to have been of a very mild and tractable form. In the report from Columbia and Montour County Medical Society, we are informed that a few cases of spotted fever occurred in the vicinity of Danville.

Scarlet fever appears to have prevailed pretty generally throughout the State, but in no locality did there occur any wide-spread destructive epidemic, such as was witnessed in former years. In Alleghany County the occurrence of the disease is noticed. Fifteen deaths occurred from it in the city of Pittsburg. In Beaver County scarlatina prevailed to some extent during the month of January, 1868. It was confined to a narrow boundary on the south side of the Ohio River. The disease was treated with chlorate of potassa and carbonate of ammonia, with inunctions of lard. Out of seventeen cases thus treated one proved fatal, and one was followed by a partial loss of hearing. In Berks County a few cases of scarlatina appeared, from time to time, of a mild form. The disease was observed in different parts of Bradford County, the cases few in number and mild in character. Dr. Horton met with a few cases of a rash resembling scarlatina. In Cumberland County the occurrence of mild, sporadic cases of scarlet fever is noticed. The same is true, also, in reference to Northampton County.

In every portion of the State from which reports were received, mention is made of the occurrence of measles. In Reading, Berks County, and its neighbourhood, cases of the disease were numerous, and of a somewhat obstinate character. In Newville, Cumberland County, Dr. Ahl mentions the prevalence of measles marked, in many cases, by "a peculiar congestion of the lungs, involving also the larynx and trachea." These cases yielded readily to the free administration of the elixir of opium and tincture of valerian. Several cases of a like congestive disease, but unconnected with measles, fell under the observation of Dr. Kieffer. Though apparently of a very formidable character, they yielded readily to bromide of potassium and whiskey. At Big Spring, Cumberland County, it is stated that the measles had prevailed "in a particularly malignant form." Nothing unusual was observed during the early stages of the attack, but as soon as the rash began to fade, "a condition of general enervation supervened, with a rapid tendency of the morbid forces to spend them-

selves upon the respiratory organs," and in some cases, upon the fauces, larynx, and trachea only, causing in a few hours a superficial membranous deposit. Under this "deep-seated ulceration" formed, with a tendency in the deposit to rapid degeneration. A successful treatment consisted in the local application of solid nitrate of silver, and internally the free use of quinia and brandy.

In the report from Dauphin County, Dr. Seiler, of Grantville, describes an epidemic of measles which occurred in that vicinity, during the winter of 1867-68. the disease, besides the usual complications referable to the respiratory organs, was accompanied, also, by a condition of the fauces similar to what occurs in scarlatina, and by profuse and obstinate vomiting and diarrhoea. The spread of the epidemic was westward, in an irregular and sharply defined course; in its progress not a house escaped its visitation. Its rapid disappearance was coincident with a heavy fall of snow. In the southern portion of Northampton County the occurrence of measles, in March, 1868, to the extent of seven cases in one family, is referred to, with the remark that as the disease prevailed at Easton and Bethlehem as an epidemic in January, and as the family just referred to lives but six miles from either of these places, that it seems somewhat remarkable that the disease should be thus confined to it. In one of the seven cases the disease was complicated with pneumonia, and terminated fatally. In Easton, cases of the disease occurred during nine successive months, ceasing in May, 1868. In no case were any malignant symptoms exhibited. A mild antiphlogistic or cooling treatment was the one relied on. Of over one hundred cases treated by Dr. Green, no one terminated fatally. As in the epidemic of 1864, cases of a second attack in the same person were not uncommon.

Smallpox does not appear to have prevailed so generally nor to so great an extent in any locality as it did a few years ago. This favourable change is to be attributed mainly to the greater efforts made by the physicians of the State to extend vaccination among the children, and their greater care to render vaccination, in each case, genuine and efficient. In Alleghany County smallpox appeared some two years since, about ten miles above the city of Pittsburg, on the Alleghany River. Since then it has continued to follow the course of the river, prevailing amid the filthy and crowded localities along its shores. When it reached within a short distance of the mouth of the river it passed over into Alleghany City, and subsequently spread amid various parts of the city of Pittsburg. A large number of those attacked had been previously vaccinated; in such the severity of the disease was usually in a direct ratio to the remoteness of the vaccination. Yet notable exceptions to this rule occurred. During the year 1867, twenty-seven deaths from variola occurred in the city of Pittsburg.

In the report from Columbia and Montour County Medical Society we are told that, in the summer of 1867, the smallpox was introduced into Danville by the arrival of a person having the disease. In two weeks it prevailed in most parts of the town. An ordinance was passed, enforcing under penalty, general vaccination and revaccination. The evidence of the good effect of this measure was never, we are told, more striking. I could not learn, says the reporter, of a single case of varioloid occurring in any one in whom a recent successful vaccination had been effected. In a number of instances where the variolous poison had been already received, prompt vaccination has been known to prevent the development of disease. After the general vaccination the smallpox disappeared from Danville.

In Grantville, Dauphin County, smallpox was introduced in the same manner as above, and similar effects from immediate vaccination—the arrest of the spread of the disease and the amelioration of its character in such of the unprotected as had been exposed to its contagion—were found to result.

Dr. J. T. Carpenter states, in the report from Schuylkill County, that "a localized endemic of variola occurred in two adjoining streets of the town of Pottsville. About twenty-five cases were noted, with two deaths, both in children under three years of age. General and successful vaccination prevented any spread of the disease. Several families were vaccinated by Dr. C. after smallpox had occurred in their midst, and in every instance its further spread was arrested. Many of these were primary vaccinations, in families where protective measures had been entirely neglected. In the neighbourhood referred to there

were some thirty per cent. of successful revaccinations. Several cases of vario-  
loid occurred among adults who declined to be revaccinated, trusting to the  
efficacy of the primary operation.

Diphtheria is noticed as having occurred in Alleghany, Beaver, Bradford, and  
in Schuylkill Counties, but it does not appear to have prevailed to any great  
extent or assumed any degree of severity in any portion of the State. Genuine  
membranous croup is mentioned only in a single case in the report from Brad-  
ford County.

Four cases of acute laryngitis are referred to by Dr. Martin Luther, in the  
report from Berks County, in which a rapid cure was effected by the use of ice  
externally and internally. The same treatment he has found very successful, also,  
in the treatment of diphtheria. The external use of ice Dr. Brooke has found  
very serviceable likewise in cases of tonsillitis and of serofulous ophthalmia.

Catarrhal affections, generally, however, of a very mild character, appear to  
have prevailed as usual in most parts of the State. During the winter and  
spring months, in many sections, cases of acute bronchitis and of pneumonia  
were observed.

Hooping-cough prevailed to a considerable extent throughout the city of  
Pittsburg, Alleghany County, during the year 1867, and was attended by an  
unusually large mortality—causing four per cent. of all the deaths recorded.  
This increased death-rate was due, chiefly, to the intercurrent of pneumonia.  
The expired air, as well as the sputa, was examined microscopically in three  
cases, to ascertain if any infusoria, as described by Ehrenberg, Poulet, and  
others, were present, but none of the species of *bacteria* described by them were  
detected. Dr. Bonham speaks lightly of the efficacy of bromide of potassium  
in the control of pertussis.

In Beaver, the report from that county informs us, pertussis prevailed epi-  
demically during the spring months. All the cases which proved fatal were in  
infants, and complicated with congestion of the lungs. Bromide of potassium,  
in large doses, may, the reporter of the Beaver County Medical Society remarks,  
be regarded as almost a specific in the disease.

In the Berks County report, Dr. Wallace, of Reading, remarks: "In the early  
spring (1868) we were visited by an epidemic of hooping-cough of a mild charac-  
ter." In its treatment, Dr. Ulrich reports marked success from the use of the  
bromide of potassium; whilst Dr. W. has found the bromide of ammonium to  
afford decided relief after the failure of the former. Dr. S. S. Kurtz, of Reading,  
states that he has tested the influence of vaccination, either in the immediate  
arrest of hooping-cough or in the decided amelioration of its more violent  
symptoms, in a sufficient number of cases to bear positive testimony to its  
efficiency.

In the report from Indiana County it is stated that pertussis had occurred to  
a limited extent in different parts of the county during the preceding twelve  
months, but of so mild a character that the care of the physician was seldom  
called for.

Notwithstanding we have reason to believe that consumption of the lungs is  
on the increase in different parts of the State, mention is made of the disease  
in only one of the reports, that from Erie, in which it is remarked that it has  
been generally supposed that phthisis is an endemic of the lake shore. This is,  
to a considerable extent, an error. That, during the severe winters and trying  
springs peculiar to this region of country, consumption will become developed  
in immigrants predisposed to the disease, or in those in whom, from any cause,  
a tubercular diathesis has become established, is certainly true; but that  
phthisis pulmonalis is more prevalent along the southern shore of Lake Erie,  
compared with the country generally, is not sustained by any authentic observa-  
tions.

In Beaver County dysentery made its appearance in the month of August.  
Nearly all the cases—which, fortunately, were few in number—assumed the  
typhoid form, and were of a most obstinate character. The only treatment that  
appeared to do any good was large doses of opium with acetate of lead, and  
injections of nitrate of silver (10 grs.), laudanum (1 drachm), and water (1 oz.).  
The injection was given after each stool, the rectum being first washed out with

tepid water. Quinia and brandy were administered in cases in which there was much prostration. No case terminated fatally after the adoption of this treatment. Dysentery prevailed in Lehigh County during July and August, 1867. A few of the cases assumed a typhoid character. In the month of February, Dr. Reichard treated four cases of acute dysentery, all in one neighbourhood. The disease prevailed during the hot season of the year, to a limited extent, in parts of Schuylkill County, but was very amenable to treatment. In Pottsville, Dr. Carpenter says, during August and September, 1867, dysentery of an intractable character was prevalent.

In the latter part of October, 1867, the Asiatic cholera was introduced into the city of Reading, Berks County, and spread over a large portion of the town. About twelve cases in all occurred, more than one-half of which proved fatal.

The other bowel affections, diarrhœa, cholera infantum, and cholera morbus, appeared to have prevailed to a less extent during the summer, autumn, winter, and spring of 1867-68 than in former years, and, with very few exceptions, in a less severe form.

Rheumatism, as a prevalent complaint, is noticed in several reports. Dr. A. B. Dundor, of Reading, Berks County, speaks highly of the success of sulphite of soda in this disease. In the report from Cumberland County, Dr. S. P. Zeigler, of Carlisle, reports an interesting case of subacute inflammatory (arthritic) rheumatism, in a young girl about twelve years of age. With uncommon severity, the disease, which affected chiefly the joints of the upper extremities, lasted somewhat over two weeks, medicine proving of little avail. When suddenly the rheumatic symptoms were supplanted by a severe attack of chorea, with marked tenderness over the cervical and upper dorsal vertebrae. The patient finally recovered under the use of tonics and stimulants.

In the report from Schuylkill County we are told that, in the early part of 1868, rheumatism, in its various forms, prevailed to some extent. In a few cases it left behind it organic disease of the heart or kidneys. In the same report, Dr. Carpenter, of Pottsville, speaks highly of the efficacy of the vapour bath in the treatment of acute rheumatism. In every instance, he remarks, it promptly relieved pain and abated fever, shortened from weeks to days the duration of the disease, eliminating by the skin so effectually the rheumatic poison from the system that the usual dangerous complications and sequelæ were much less frequent than usual. The bath is continued from fifteen to twenty minutes, when the patient is to be rapidly washed with cold water, and put to bed wrapped in a warm blanket.

In the report from Alleghany County, Dr. Benham states that some cases of puerperal peritonitis occurred in Pittsburg, while other cases were noticed which might with more propriety have been styled *peritoneal hyperæsthesia*, evidently due to the depression of nervous power incident to the puerperal state.

Dr. McConaughy, of Indiana County, describes an anomalous nervous affection, chiefly occurring in females, many cases of which fell under his notice. In no instance did there occur more than one case in the same family. In many instances the disease commenced like an attack of influenza with excess of nervous disturbance. Frequently the symptoms were simply nervous, without the presence of any catarrhal or bronchitic symptoms. In many instances the attack set in suddenly, and with violence; in others the disease set in slowly, in the course of, or as a sequel to, some other ailment. The disease seems to have been the result of temporary irritation and congestion of the meninges and substance of the brain and spinal marrow, frequently causing hallucinations and delirium. Exacerbations were observed to take place during the night, often with decided amelioration of the symptoms in the morning. Sleep could not, in some cases, be secured even by large doses of anodynes, while in others these would readily procure rest. There was seldom much disturbance of stomach, but almost always a torpid condition of the liver, producing a sallowness of the skin. In a few cases the tongue was coated. There was seldom any thirst. In some cases there was no cardiac disturbance, in others it was present to a great extent. At times a strange sense of nervous sinking would affect the entire system. Even when able to be about, and without any disturbance of pulse, the patient would experience a sense, as it were, of imme-

diate dissolution. In many of the cases very distressing vertigo was present, succeeded by every symptom of apoplexy from congestion; in other cases there was only a sense of formication, and numbness was felt over the face, chest, stomach, etc., and the extremities. Great tenderness of the spine existed, and often of the intercostal muscles to the extent of rendering breathing very painful, and attended with a frequent, dry, hacking cough, without, in any instance, the slightest indication of any lesion of the lungs being detected upon the most careful examination. In a young unmarried lady thus affected the symptoms suddenly ceased, and suddenly those of phlegmasia dolens became developed. In two cases violent convulsions were brought on by imprudence; they lasted for several hours, but were relieved by large doses of bromide of potassium. The treatment consisted in watching indications carefully, and meeting them—checking nervous excitement, and supporting the system. Counter-irritation and anodyne liniments proved very beneficial. The bromides of potassium and ammonium were decidedly useful—the former when excitement, and the latter when debility prevailed. Valerianate of strychnia, the preparations of iron, and the mineral acids proved in many cases to be efficient remedies. Relapses from slight causes, and often without any apparent cause, were frequent. Attacks of the disease were known to persist, with temporary intermissions or ameliorations of symptoms, for more than a year.

In the reports embraced in the volume of *Transactions* before us will be found the histories of several very interesting cases, surgical and obstetrical, some of which, could the room be spared to us, we should feel inclined to introduce in the present notice. We may remark, also, that several of the reports are prefaced by short topographical and geological notices of the county from which they respectively emanate. The entire report from Luzerne County is made up of such notices in reference to that county. Many of the reports have appended to them short biographical notices of recently deceased members.

Following the reports we have two papers. The first, by Dr. Hiram Corson, of Montgomery County, is on "*Food for Infants*;" the second, by Dr. Benjamin Lee, of Philadelphia, is on the "*Diagnosis, Positive and Differential, of Spinal Arthro-Chondritis*."

The paper of Dr. Corson is a highly suggestive one, and deserving of a careful perusal. We cannot, however, agree with the Doctor as to the propriety of feeding the infant from birth upon undiluted cow's milk. We have seen, in many instances, where this has been attempted, the formation in the infant's stomach of solid firm coagulæ, the presence of which, as Dr. Horner has shown, has a tendency to excite convulsions. Beside the less amount of casein in the milk of woman than in that of the cow, it does not possess like the latter the facility of being united and moulded into firm consistent masses, but always presents itself in the form of loose flocculi, which will not readily be made to coalesce. It is probable that in a pure healthy location in the open country, where experience, here and abroad, has shown infants to be more readily reared without the breast than in large cities, they may also be able to dispose of, nay, may even require a milk richer in albumen to insure their sufficient and healthful nutrition.

2. The theme of Dr. J. C. JOHNSON'S presidential address at the meeting of the *Medical Society of New Jersey*, is some points in reference to "Our Personal Relations to Positive Therapeutics." The subject is handled with marked ability and good sense, and is eminently suggestive.

The first of the medical essays read at the session is one by Dr. T. F. CULLEN, on "The Inutility of Tenotomy in the Treatment of Congenital Varus," with the recommendation to trust its cure entirely to the application of appropriate apparatus resorted to at an early age. There is much soundness in Dr. C.'s objections to the use of the knife for the cure of the deformity referred to, and some very strong arguments in favour of the efficiency of a proper apparatus, when its application is commenced sufficiently early.

The essay which follows is "On the Mechanism of Labour," by THOMAS RYERSON, and is marked throughout by much ability. On many points connected with this important subject, practitioners will acquire from a study of this



essay; important hints, enabling them to correct mistakes and supply omissions in the account of the mechanism generally given by the leading obstetrical authorities. The essay must be read entire, however, in order that the description given by Dr. Ryerson may be properly appreciated; no analysis of it, adapted to our limits, would do justice to either the writer or reader.

From the "Report of the Standing Committee," we learn that throughout New Jersey the weather was unusually cold and wet. The maximum temperature,  $88^{\circ}$ , was below that of any of the twenty-three years preceding. In only one other, 1857, did the mercury fail to reach  $90^{\circ}$ . The mean temperature,  $49.67^{\circ}$ , was about  $1.24^{\circ}$  below the average of the preceding twenty-three years, one only, 1856, having a lower mean. The average of water (rain and melted snow) during the twenty-three years, was 44.631 inches. The quantity that fell in 1867 was 57.730 inches; 10.1 inches more than the average during the above period. The greatest fall of water occurred previously to September 1. With this peculiar condition as to atmospheric temperature and moisture, there was associated, nevertheless, an unusual degree of health. The reporters from all portions of the State concur in this statement.

A review of the sanitary condition of the State during the year 1867, and up to May, 1868, while it shows that there was an unusual prevalence of health—shows, also, that this was associated with more than the ordinary occurrence of disease of the respiratory organs. Pneumonia quite generally, and measles and phthisis to a more limited extent, form the staple of nearly all the reports. Pleurisies and pneumonias are most frequently associated with the rarefied atmosphere of the more elevated regions of the State. During the past winter the weather throughout has been pretty much of a similar character with that of the regions referred to. From December to the middle of March, the temperature was very uniformly cold, and the ground generally covered with snow. The dampness and fogs of the more temperate days were rendered particularly uncomfortable, and were severe in their influence upon those exposed to them in consequence of the freezing state of atmosphere. A sudden epidemic of pneumonia occurred in Hudson, when, as Dr. CULVER states, the weather was damp and foggy, with a fine rain or falling mist, and cold enough to freeze the mist as it fell, glazing the ground everywhere with ice. The very general absence of any severe or wide-spread epidemic is noticed in all the District reports. Scarlatina occurred in some portions of the State, but usually to a limited extent, and seldom attended by any very severe mortality. Measles was more generally spread over the State, attacking adults more frequently than is usually the case. The disease, when simple, was easily managed; but when complicated with pneumonia, or broncho-pneumonia, which was the case as it appeared in many localities, it assumed a character of great severity.

The disappearance entirely, or to a very considerable extent, of intermittent and remittent fever, from some of the so-called malarial districts of the State, is noticed in the majority of the reports. How far these diseases have been replaced by some form of typhoid or enteric fever we are not informed.

We notice some of the new remedies to which our attention has been called in the reports. *Apocynum cannabinum* has proved very efficient in the practice of the medical men of Cumberland County, as a diuretic in the treatment of dropsy, either in powder, dose ten grs., or in decoction  $\zeta$ ss to Ojss of water, reduced to Oj.

A more matured experience with the bromides as remedial agents has failed to sustain the confidence that has been claimed for them. Their effects are very variable. In many instances their quieting influence is undoubted. They often relieve cerebral congestion of either an active or passive nature, but further experience seems to be necessary to determine their true remedial efficiency in such cases. Two cases of laryngismus stridulus are reported by Dr. Varick to have been successfully treated by the use of the bromides internally in conjunction with tincture of iodine externally. These cases had been under the treatment of other physicians a considerable time before he saw them. The bromides do not, it is admitted, cure epilepsy, though they will, during their use, unquestionably mitigate the attacks of the disease, and lessen their frequency. The bromides, also, seem to afford decided relief in many cases of whooping-cough,

relieving the paroxysms of coughing, and allaying the temporary head symptoms so apt to occur in severe cases. It is an appropriate inquiry in this connection, whether the variable effects of the remedy may not, to some extent, be due to the varying quality of the article used.

The *bisulphite of soda* has appeared to prove effectual in erysipelas, and the malignant forms of scarlatina, diphtheria, and typhoid fever. The bisulphite of magnesia is the preferable form, because tasteless, and hence more easily administered.

*Chloroform*, administered internally, has been found to be an excellent stimulant and antispasmodic in the dose of, say, 20 drops in a little brandy. In a case of cramp of the stomach, reported by Dr. HUNT, relief was obtained by doses, the second given after an interval of ten minutes, when morphia and other remedies had failed. Dr. Love recommends, in cases of delirium tremens, the following prescription: R.—Chloroform ʒj; glycerine ʒss; sulphate of morphia gr. ij; in doses of a teaspoonful every half hour until sleep is induced.

Appended to the report of the Standing Committee are short biographical notices of deceased members.

D. F. C.

#### ART. XXIX.—*Reports of American Hospitals for the Insane.*

1. *Of the New Hampshire Asylum, for the fiscal year 1867-68.*
2. *Of the Connecticut General Hospital, for the fiscal year 1867-68.*
3. *Of the Mass. State Hospital, at Worcester, for the fiscal year 1866-67.*
4. *Of the Mass. State Hospital, at Northampton, for the fiscal year 1866-67.*
5. *Of the New York State Asylum, for the fiscal year 1866-67.*
6. *Of the New York City Asylum, for the year 1867.*
7. *Of the Frankford Asylum, for the fiscal years 1866-67 and 1867-68.*
8. *Of the Mount Hope Retreat, for the year 1867.*
9. *Of the Longview Asylum, for the fiscal year 1866-67.*
10. *Of the Indiana Hospital, for the fiscal year 1866-67.*
11. *Of the Michigan Asylum, for the fiscal year 1866-67.*
12. *Of the Alabama Hospital, for the fiscal year 1866-67.*
13. *Of the California Hospital, for the fiscal years 1865-66 and 1866-67.*

1. The new building for thirty-six patients at the *New Hampshire Asylum for the Insane* was nearly complete at the date of the report in hand, and would be ready for occupation in June, 1868.

	Men.	Women.	Total.
Patients treated during the year ending April 30, 1868	177	187	364
Discharged, cured	21	30	51
Died	12	6	18

Died, from exhaustion of acute mania, 5; exhaustion of chronic mania, 6; epilepsy, 5; general paralysis, 5; and apoplexy, 2.

"Frequent lectures," says Dr. Bancroft, "concerts of music; dramatic rehearsals, in which patients sustain parts; readings; tableaux; social gatherings, with dancing; these, in addition to out-door labours and recreations, have, during the year, been quite freely employed, and with satisfactory results.

\* \* \* \* "The experience of the year has confirmed the views heretofore expressed of the important place which these moral agencies hold in the treatment of the insane. Whether they shorten the period of convalescence or not, it appears clear that they greatly mitigate the sense of sacrifice in absence from home and friends, and reduce materially the irksomeness of the limitations of personal freedom which restoration to mental health demands."

2. The corner-stone of the *General Hospital for the Insane* of the State of Connecticut was laid "with impressive and appropriate ceremonies" on the 20th of June, 1867. "The work has since been vigorously pushed on," and on the 1st of April, 1868, the date of Dr. Shew's report, which is now before

us, a permanent carpenter's shop, a laundry, bake-house, kitchen, and boiler-house, were completed.

"The south wing and return wing are fully completed and ready for occupancy on the first of May. The main or centre building is in an advanced state of forwardness; is roofed and painted, and will soon be finished."

3. The operations of the *Worcester Lunatic Hospital* during the official year ending with the close of September, 1867, furnish the following numerical results:—

	Men.	Women.	Total.
Whole number treated during the year . . . . .	344	325	669
Discharged, cured . . . . .	86	72	158
Died . . . . .	26	14	43

Deaths from acute mania, 3; organic disease of brain, 3; phthisis, 8; disease of heart, 2; epilepsy, 7; general paralysis, 5; marasmus, 6; disease incident to old age, 5; exhaustion of chronic mania, 4.

Having mentioned cases in which death soon followed the admission of the patient, Dr. Bemis says: "While it is highly important that prompt measures be resorted to in the treatment of insanity, the most scrupulous care should be taken that the patient be not subjected to the exposure and fatigue attendant upon removal in a feeble and exhausted state of health." Upon the subject of treatment, he says: "Among the many physical conditions of mental disease, perhaps no one requires more frequent attention, or is oftener overlooked, than that disordered state of the stomach and bowels which so often gives rise to constipation; sometimes alternating with diarrhœa, and accompanied with indigestion, flatulence and eructations, anorexia and nausea, transient pains in the hypochondria, livid and yellow suffusions of the skin, viscid secretions of the mouth, and offensive breath; that condition of the alimentary canal which, by sympathy, influences the brain, and gives rise to that general uneasiness and dissatisfaction which trouble so many persons so often; that state of the mind in which nothing in the affairs of life gives pleasure or hope; that quality of the affections which rejects all the attentions of friendship, all the kind offices of love, and produces also that depressing effect which diminishes the strength of the memory, blunts the imagination, and destroys the power of concentration."

"Kind and judicious conversation is, with very many, a powerful moral means of restoration to reason."

4. The general statistics of the *Northampton Lunatic Hospital*, for the official year 1866-67, are as follows:—

	Men.	Women.	Total.
Whole number treated . . . . .	243	300	543
Discharged, cured . . . . .	22	19	41
Died . . . . .	23	24	47

Deaths from phthisis, 19; marasmus, 8; paralysis, 5; epilepsy, 3; suicide, 3; typhomania, 2; convulsions, 2; paresis, diarrhœa, dysentery, abscess, and injury, 1 each.

"There is one feature," in the course of lectures delivered last year, says Dr. Earle, "to which I desire to direct your attention; and that is, that no less than six of the discourses were upon diseases of the brain which are accompanied by mental disorder. This is the first time that an audience of insane persons ever listened to a course of lectures upon their own malady. When we remember how cautiously any allusion to the insanity of a person is generally avoided when in conversation with him; and further still, in view of the prevalent fear of the insane in the popular mind, the attempt to entertain a gathering of more than two hundred and fifty mental aliens by discourses upon their disorder, may, by some persons, be regarded as hazardous. It must be confessed that, notwithstanding my long experience with this class of persons, the attempt was approached with some doubts and misgivings. It was considered possible, both that offence might be given, and that some of the most excitable patients might become noisy by speech and turbulent in action, and

that the tumult might extend until the only resource would be in an adjournment to home quarters.

"The event demonstrated the folly of any fears on those grounds, and triumphantly vindicated any claims which might have been advanced by the patients of being *reasonable*, if not wholly rational. No public speaker need desire a more quiet audience than that at each of the six lectures in question. By the more intelligent of the patients they were considered the most interesting lectures of the course; and, to a large extent, they were the subject of daily discussion among them."

5. At the *New York State Lunatic Asylum*, the general results of the operations for the fiscal year 1866-67, were as follows:—

	Men.	Women.	Total.
Number treated . . . . .	541	501	1042
Discharged, cured . . . . .	79	80	159
Died . . . . .	28	23	51

*Causes of Death.*—Phthisis pulmonalis, 16; general paresis, 8; exhaustion from mental disease, 11; paralysis 4; old age and exhaustion, 4; suicide, 2; apoplexy, 2; meningitis, epilepsy, heart disease, and gastritis, 1 each.

"The general principles of treatment in insanity," says Dr. Gray, "correspond in a remarkable manner with the means which experience has shown to be useful in other nervous affections. In all states of acute irritation of any portion of the nervous system, we permit the strictest observance of that quiet which is instinctively sought by the patient. In many chronic nervous diseases, on the other hand (for example, conditions of muscular weakness), we pay no heed to the sensation of weakness felt by the patient; we know that it is rather by combating this sensation, so that he has frequently, at the commencement, to be half compelled to resume muscular action and exertion, that the normal innervation will again be ushered in and established. Brodie has repeatedly called attention to this point in the treatment of neuralgic and sub-paralytic conditions of the extremities.

"A very extended experience has shown that the above-mentioned requisites can, for the most part, only be complied with by totally changing the occupations of the patient, by entirely removing him from his usual neighbourhood, and by exposing him to the influence of new and perfectly different impressions."

Dr. Gray discusses at length the general plan of provision for the insane, and condemns asylums for the incurable.

6. In the tabular statements of the report of the *New York City Lunatic Asylum* for the year 1867, we find the following numbers:—

	Men.	Women.	Total.
Whole number treated during the year . . . . .	564	877	1441
Discharged, cured . . . . .			202
Died . . . . .	59	63	122

Died of asthenia, 17; phthisis, 17; exhaustion from mania, 16; inanition, 11; diarrhœa, 9; *paralyse générale*, 7; chronic diarrhœa, 6; old age, 6; epilepsy, 6; congestion of brain, 4; suicide, 3; pleuro-pneumonia, 2; pneumonia, 2; drowned, 2; and 1 each of 15 other diseases and injuries.

7. The statistics of the *Frankford Asylum*, for the official year 1866-67; are as follows:—

Whole number treated during the year . . . . .	89
Discharged, cured . . . . .	7
Died . . . . .	6

Died of metastatic rheumatism, acute mania, apoplexy, epilepsy, erysipelas, and inflammation of the liver, 1 each.

Dr. Worthington, in allusion to the hope of cure in chronic insanity, says: "One of the cases discharged, restored, during the past year, had been insane for three years prior to her admission, and recovered her reason after nearly three years more spent in the Asylum. Another case of more than five years'

duration, after a residence in the Asylum of nearly a year, passed in a state of extreme agitation and excitement, gradually became calm and rational, and after several weeks' trial at home, continued so well as to be discharged much improved, if not entirely restored to her usual mental health."

We proceed to the report for 1867-68:—

Number treated during the year . . . . .	90
Discharged, cured . . . . .	12
Died . . . . .	6

Died of marasmus, 2; epilepsy, paralysis, chronic diarrhœa, and acute cerebral disease, 1 each.

In regard to moral treatment Dr. Worthington, says: "Much better than the employment of physical force in all but a few exceptional cases, for retraining their disorderly conduct, is the exercise of a salutary discipline, which by making the privileges they enjoy dependent on the measure of their own self-restraint, places before them the strongest inducements to conduct themselves with propriety. In a well-regulated hospital the whole course of treatment necessarily has the effect upon the patient to encourage the habit of self-restraint—the seclusion which is necessary for his safety and recovery diminishing by regular gradations as he approaches a healthy condition, he naturally desires to shorten its duration by getting well as rapidly as possible."

8. In the course of the year 1867, a large addition to the *Mt. Hope Retreat*, was completed, and its apartments occupied by patients transferred from the Mt. Hope Institution. The statistics include the operations of both establishments:—

	Men.	Women.	Total.
Number treated during the year . . . . .	242	140	382
Discharged, cured . . . . .	20	28	48
Died . . . . .	10	11	21

Besides the above, 37 cases of mania-a-potu were treated, one being in hospital January 1st, and 36 admitted in course of the year. They were all males. The results were: discharged, cured 33; died, 2; remaining, 2.

"Intemperance," says Dr. Stokes, "is the fruitful source of the great majority of the cases brought here for treatment, and in more than one instance, we have ascertained that the use of stimulants had been commenced at the recommendation of the medical adviser, as necessary for the maintenance of the health of the individual. Is not stimulation in disease too general and indiscriminate in the practice of the present day? We believe that the soundest medical experience will warrant this opinion."

9. The records of the *Longview Asylum*, for the official year 1866-67, present the following general results:—

	Men.	Women.	Total.
Number treated during the year . . . . .	287	298	585
Discharged, cured . . . . .	37	66	103
Died . . . . .	21	22	43

Deaths from phthisis, 13; epilepsy, 6; apoplexy, 3; general paralysis, 3; maniacal exhaustion, 3; typhomania, 3; pneumonia, 2; marasmus, 2; general debility, 2; chronic diarrhœa, gastro-enteritis, hepatic abscess, typhoid fever, scrofula, and "*in articulo mortis*," 1 each.

Dr. Langdon's report is chiefly confined to matters of local interest. He says nothing in regard to the medical treatment of the insane, but, from two items in the table of expenditures, it may reasonably be inferred that he approves of stimulation. These items are:—

"Ales, wines, &c. . . . .	\$2286 03
Medicines . . . . .	915 90"

10. The new wing of the *Indiana Hospital for the Insane*, mentioned in the report for 1866 as in progress, is nearly completed.

	Men.	Women.	Total.
Number treated during the year ending Oct. 31, 1867	257	249	506
Discharged, cured . . . . .	65	60	125
Died . . . . .	16	18	34

Died of exhaustion from acute mania, 20; exhaustion from chronic mania, 4; apoplexy, 1; general paralysis, 1; anæmia, 1; dysentery and maniacal exhaustion, 2; phthisis, 4; injury from fall, 1.

"The anniversary of the nation's independence was appropriately celebrated by the assembling in the grove of all the patients that could be permitted to leave the wards for such purpose, together with all the officers and most of the employees of the institution."

Dr. Lockhart's report is brief, and contains very little of general professional interest.

11. The general statistics of the *Michigan Asylum for the Insane*, for the official year 1866-67, are as follows:—

	Men.	Women.	Total.
Number treated during the year . . . . .	114	128	242
Discharged, cured . . . . .	15	13	28
Died . . . . .	6	4	10

Died of phthisis, 3; general paralysis, 2; exhaustion, 2; paralysis, epilepsy and peritonitis, 1 each.

"The somewhat general impression," says Dr. Van Densen, "that the child of a parent who has been insane is quite sure to suffer in the same manner, is by no means correct; it is often mischievous, in suspending over the former a painful and ever present apprehension, generally morbid in its influence, and of service, perhaps, when it leads to a judicious and healthful system of development and discipline, and more carefully regulated habits of life. It is evident enough that there can be no possible direct transmission to offspring in the case of a parent who, many years afterwards, from purely physical causes, may suffer from an attack of mental disease."

The number of insane in Michigan, in 1860, according to the national census, was 251; the number in 1864, as reported in the State census, was 645.

12. The *Alabama Insane Hospital* was opened on the 6th of July, 1861, soon after the beginning of the recent war. The report before us is the first that we have received. The subjoined statistics are for the fiscal year 1866-67:—

	Men.	Women.	Total.
Number treated during the year . . . . .	90	61	151
Discharged, cured . . . . .	7	6	13
Died . . . . .	11	4	15

Died of exhaustion, 3; epilepsy, 3; marasmus, 2; phthisis, 2; pneumonia, meningitis, chronic dysentery, enteric fever, and ecchyma, 1 each.

Until recently but one wing of the building has been occupied by patients; a part of the other is now occupied by negroes.

In his remarks upon education, in its relations to insanity, Dr. Bryce says:—

"I do not think I exaggerate if I say, that, among the wealthier and better classes of society, more diligence is bestowed upon the development in youth of the feelings and emotions, than of the intellect. \* \* \* \* The philosophy of living, if I may so express it, seems to be founded on this modern principle. From the mimic discipline of the nursery to the decrees of a criminal court; in the amusements of the people; in their intercourse, religion, manners, pursuits, opinions, and pervading, to some extent, even their industrial avocations, there is a very decided infusion of factitious sentimentalism. The passions or emotions are more early and strongly developed than reflection, comparison, and judgment, and unless intelligently controlled and directed in the beginning, can hardly, in maturer life, submit to intellectual subordination.

With such persons, to feel is sufficient incentive to do, and the thinking faculties, because never cultivated, are always in abeyance. There is a class of patients in our insane hospitals—and they are much more numerous now than in former years, before the refinement which wealth and civilization confer had been attained—which painfully illustrate the truth of this statement."

13. A new building for the *Insane Asylum of California* was in process of construction in 1867. The first section of one wing was in operation in October, and the central edifice was nearly finished:—

	Men.	Women.	Total.
Number treated in two years ending Oct. 1, 1867	899	325	1224
Discharged, cured . . . . .	198	58	256
Died . . . . .	116	35	151

Deaths from consumption, 38; general paralysis, 36; paralysis, 4; paralysis and accidental choking, 1; apoplexy, 5; serous apoplexy, 1; meningitis, 1; acute encephalitis, 1; cerebral effusion, 6; chronic encephalitis, 1; convulsions, 1; epilepsy, 7; maniacal exhaustion, 14; marasmus, 8; scrofula, 2; scirrhus, 1; scirrhus of stomach, 1; syphilis, 2; uræmia, 2; old age, 2; gastro-enteritis, chronic diarrhœa, dropsy, anasarca, peritonitis, pyæmia, tuberculosis, hemorrhage of bowels, debility from intemperance, pulmonary apoplexy, anæmia, uterine hemorrhage, uterine disease, heart disease, abscess of liver, erysipelas, and suicide, 1 each.

More than one-fourth of the mortality from paralysis! to say nothing of that from other forms of organic cerebral disease. A sad illustration, indeed, of the havoc upon the cerebro-spinal system made by agencies which have operated with exaggerated force in California, owing to the peculiar circumstances of its settlement. That State, according to the report, already contains one insane person in "about every six hundred of its inhabitants." "The increase of the insane in California, in proportion to the population," remarks Dr. Shurtleff, "is more rapid than in any of the other States or in any part of Europe. For the past ten years it has averaged about fifty annually. Calling the average population, during the same period, five hundred thousand (an over estimate, but our insane represent rather more than the population of our own State), we find an annual increase of one insane person in every ten thousand of population."

Of 2598 cases admitted to the hospital, causes of the insanity were assigned in 1457. The six most prolific of these causes, together with the numbers attributed to each, are as follows: Masturbation, 287; ill health of various kinds, 252; intemperance, 196; religious excitement, 156; perplexities in business, 134; domestic unhappiness, 86; expensive and harassing litigation in the settlement of land titles is mentioned as a cause of insanity "almost exclusively Californian."

P. E.

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ART. XXX.—*Researches on the Nature and Treatment of Diabetes.* By F. W. PAVY, M. D., F. R. S., F. R. C. P., Senior Assistant-physician to, and Lecturer on Physiology at, Guy's Hospital. Second edition, revised and enlarged. 8vo. pp. 297. London: John Churchill & Sons, 1869.

DR. PAVY's views upon the hepatic functions and diabetes are familiar to the profession. In this second edition of his work they are reasserted, and supported by the author's additional experience together with the recent investigations of other physiologists. The book has been remodelled, and much improved by a more careful division into sections, of which that upon symptomatology is especially to be commended. It examines the abnormal conditions frequently associated with diabetes as well as those always manifested. We

regret to notice, as heretofore, the absence of an index; even a summary of contents is omitted. These disadvantages are obviated in part only by specific headings to the various pages; a new feature since the first edition. The first section, on the "detection and quantitative determination of sugar," has been considerably amplified, and is a good guide in such processes. We notice, however, no allusion to *Moumené's method*, nor to the *Bismuth test* recently introduced by Böttger and claimed as more accurate than Fehling's cupropotassic solution.

The most important additions to the physiological chapter are connected with the researches of Dr. McDonnell, of Dublin (*Observations on the Functions of the Liver*, 1865), and those of Schiff (*Journal de l'Anatomie et de la Physiologie*, 1866). The former observer experimented on cats, and found in one case "that 500 grains of liver, boiled immediately after death, gave an indication of sugar so slight as to be almost inappreciable and incapable of being estimated," while the same quantity allowed to remain in the body of the animal for 20 minutes after death, contained 12.5 grains of glucose. Another similar case is cited. Much has been made to depend upon the absence or presence of sugar in the liver of the cat, and until *no evidence whatever* can be found of its existence there immediately after death, we are not warranted in abandoning the views of Bernard. McDonnell also froze a living, healthy hedge-hog, gradually reducing the temperature until the entire animal was frozen into a solid mass. The liver gave "not the slightest evidence of sugar." "This fact is perhaps the most conclusive evidence which can be offered, that during life and health the liver is not normally employed in effecting a glycogenic transformation." Schiff, Meissner, Jaeger, and Herzen obtained similar results by their experiments upon living animals, and strongly insist upon *cutting up into very small parts* the piece of liver which is tested before it is plunged into boiling water, so that the heat may immediately penetrate the whole thickness.

McDonnell thinks that the amyloid substance is converted by union with nitrogen into a protein compound resembling casein, which passes away in the hepatic blood. Pavy regards its transformation as resulting in a matter allied to fat. This is, however, speculative, and does not touch the initial question of fact as to which they agree.

Dr. Pavy adds a third case to the two previously published in which the usual *post-mortem* production of sugar failed to take place in the liver, although amyloid substance was contained in quantity in the organ (see 1st ed. p. 65). Some experiments of Schiff are quoted in confirmation of this. The fact, pointed out by Dr. Michael Foster (*Proc. of the Roy. Soc.*, No. 79, 1865), that amyloid substance exists largely in the bodies of certain entozoa, without being prone to undergo transformation into sugar after death, except a ferment be furnished, accords with Dr. Pavy's former statements as to the permanent presence of the amyloid substance, indisposed to change, in the mussel and other lower animals.

The discussion concerning the *pathology* of diabetes has been expanded by the incorporation of much new matter, especially upon associated states of the nervous system, so as to occupy seventy-three pages. A short chapter upon *Etiology* follows, and indicates the necessity of further untiring observation by its conclusion that "not much can be said at present about the cause of this disease.

The section on *treatment* and diet remains much as heretofore. Glycerine, so highly recommended by recent writers, is condemned by Dr. Pavy as causing an increase of distressing symptoms.

Permanganate and chlorate of potash, and peroxide of hydrogen are regarded as irrational remedies in diabetes, and the author has found no benefit to follow from their use.

E. R.



ART. XXXI.—*On Chronic Bronchitis, especially as connected with Gout, Emphysema, and Diseases of the Heart.* By E. HEADLAM GREENHOW, M.D., F.R.C.P., Assist. Phys. to Middlesex Hospital, etc. 12mo. pp. 236. Philadelphia: Lindsay & Blakiston, 1869.

THE lectures contained in this volume were originally delivered to the students of the Middlesex Hospital, in London, and some of them have already been published in the *Lancet*. The favourable reception they met with has induced the author to revise and issue them in book form.

Clinical lectures, while they undoubtedly present the subject of which they treat in a most attractive form, are not free from faults which lectures delivered at various times to different classes of students most always have. Thus, while there is a good deal of repetition in some of these lectures, they do not by any means exhaust the subject of chronic bronchitis. As an instance of our meaning, we may mention that there is no lecture on bronchial dilatation, and no allusion to the differential diagnosis between phthisis and this disease, an omission which we think Dr. Greenhow would do well to supply in any future edition of the book.

There are eight lectures. The first is taken up with some preliminary observations, and an analysis of cases observed, the various relations which bronchitis bears to other diseases being defined. The second treats of bronchitis from mechanical irritation. Two lectures are devoted to the connection which exists between this disease and the gouty diathesis, and two to that between it and pulmonary emphysema; while the remaining two are devoted to bronchitis as an effect, or cause of disease of the heart. The author is firmly convinced that, as the disease occurs in England, it is generally dependent upon the gouty diathesis, and we think he has demonstrated that such a connection does frequently exist. Omitting those cases which could properly be classed under the head of senile bronchitis, Dr. Greenhow has observed 96 cases of the disease in all forms; but he could obtain accurate histories in only 66 cases. In 36 of these he succeeded in discovering that the patient had had at some time during life gout or rheumatism; and in a few other cases he was convinced that manifestations of one or other of these diseases had taken place in one of the parents of the patient. In 5 cases only was there positive evidence that the diseases originated simply from any of the causes of taking cold; and in 5 others the history pointed to mechanical irritation as the cause. Such a close connection between gout and bronchitis has not been noticed in this country; but it is possible that, as we are unaccustomed to the inflammatory manifestations of the diathesis, we are not sufficiently alive to its occasional occurrence in other forms. The frequent alternations of attacks of bronchitis with eruptions of psoriasis and eczema which persist in spite of the prolonged administration of arsenic, and only yield to colchicum, he regards as a further proof of the essentially gouty nature of these diseases.

The treatment recommended by the author is very simple. Squill, ipecac, senega, or the tinctures of conium and of hyoscyamus, are the remedies most relied upon. As a substitute for the balsams which he has frequently found to produce nausea, he has used the tincture of larch with great advantage. Where this simple treatment has been tried without benefit, or where debility was a prominent symptom, hydrochloric acid, cod-liver oil, and gentian were given. We do not find any reference to the inhalation of medicine, or their administration by the atomizer.

The style of the lecturer is attractive, the cases presented by him are well reported, and the book may be regarded as a valuable addition to the literature of the disease.

The book is well printed on good paper, and is issued in a creditable manner by the American publishers.

J. H. H.

ART. XXXII.—*On Varicose Disease of the Lower Extremities, and its allied Disorders, Skin Discoloration, Induration and Ulcer, being the Lettsomian Lectures delivered before the Medical Society of London in 1867.* By JOHN GAY, F.R.C.S., Surgeon to the Great Northern Hospital, etc. 8vo. pp. x. 171. London: John Churchill & Sons, 1868.

IT gives us great pleasure to commend this book to the attention of our readers. Mr. Gay is already well known in this country, as well as in his own, as not only a skilful surgeon but as an earnest and successful worker in the fields of surgical literature. We willingly confess that we have learned, from reading the volume before us, a great deal about varicose veins of which we were previously unaware, and we are disposed to think that there are very few of our readers who might not derive both pleasure and profit from a careful study of Mr. Gay's production.

Our author gives us in this small book the results of no less than twenty-four dissections of cases of varicose disease which he has himself conducted, and in addition to his individual researches has collected with much trouble and care the views of other writers in all ages.

We cannot pretend, in this short notice, to follow Mr. Gay through all the ramifications of his subject, but must content ourselves with quoting his inferences and conclusions which seem to us to be well founded. Our author maintains: "1st. That varicose disease of the lower limb includes a variety of morbid phenomena, from its simplest form, in which these are limited to varicosity of a saphenous branch with some change—generally dilatation in the allied portion of the trunk vein—to its more complex, in which they involve as well the veins of the deep or subaponeurotic region.

"2d. That these phenomena indicate as their direct *cause* the expenditure, upon the saphenous as well as the deep venous system, of a powerful force, which differently affects their several orders of vessels, and issues in a compulsory *re-arrangement* of their bloodcourses, on an abnormal type.

"3d. That the re-arrangement or re-distribution of these channels, at first temporary, may, and does often become permanent by corruption of their walls and appendages as well as by the formation of thrombi within them.

"4th. That *sthenic* varicosity is a special disease of certain unvalved branches of the saphenæ which bring into direct communication with each other, either (*a*) distant portions of the same trunk, (*b*) the saphenous trunks themselves, or (*c*) these and the deep trunk veins.

"5th. That varicose disease originates in the branches of the saphenæ, from whence its course is to extend itself to the muscular system of veins.

"6th. That the saphenous trunks are prone to phlebitis; the deep veins to dilatation, with organic changes affecting principally their inner and middle coats; whilst those other and more severe morbid changes which constitute varicosity are limited to those especial communicating branches of the saphenæ which have just been alluded to. As the latter form of disease is irretrievable, its natural 'cure' is only effected by the diseased vein becoming plugged or otherwise obliterated, as the circulation becomes restored to its normal condition so as no longer to require its aid.

"7th. That whilst the formation of clot within the varicose vein is often a salutary act, it is not so to be considered in the deep veins in cases of varicosity. The channels of veins, however, that become thus obstructed may, after a time, be efficiently restored by the organization of the clot.

"8th. The *asthenic* variety differs from the *sthenic* inasmuch as while in the latter the disease is usually confined to the main branches, in the former it invades the tributaries to the smallest ramifications. Fatty degeneration of the muscular coat forms, I have reason to believe, its distinctive pathological feature.

"9th. Obstruction, direct or indirect, to the flow of blood through the trunk veins, is the immediate cause of varicose disease."

With regard to the best treatment of varicose disease, we quote the following:—

"1st. So long as varicose veins are capable of aiding in circulating the blood, though with comparatively trifling efficiency, we must (*a*) relieve the general circulation of the limb as far as possible from those causes of embarrassment in which their disease originated; (*b*) preserve the vessels in that state of usefulness to which they may have been reduced, or render them still more useful by giving artificial support to their deteriorated walls; (*c*) remedy any contingent disorder of the vein as far as it can be remedied; and (*d*) adopt such general measures as shall have the effect of indirectly imparting strength to its tissues. And 2d, (*a*) in the event of any portion of such vein becoming so hopelessly deteriorated that it can no longer aid in furthering the circulation, especially if it be irremediably painful on or without exercising the limb; or (*b*) if the vein shall have given way, or appears, from attenuation or other conditions, liable to burst without forewarning; under either of these circumstances the particular segment or entire branch must be obliterated."

In the rare cases in which Mr. Gay thinks it right to attempt the obliteration of varicose veins, he employs for the purpose "a fine needle of soft metal, crossing the vein with a silken or hempen thread, in the form of a figure of 8."

A few judicious and practical remarks upon the treatment of ulcers of the leg, conclude the volume.

Mr. Gay's book is a happy combination of original investigation and painstaking research into the history and literature of his subject. He has added five illustrations (lithographed by his own hand), which, while making no pretensions to elegance, amply serve the purpose for which they were designed, the elucidation of the doctrines contained in the text. J. A. JR.

ART. XXXIII. *Estudo sobre as Hernias Parietaes da Bexiga e sobre os Calculos Vesicaes Encarcerados*. Por J. J. Da SILVA AMADO. Premiado pela Escola Medico-Cirurgica de Lisboa em 1860, 1861, 1863, e 1864; Preparador e Conservador do Museu de Anatomia da referida escola; Primeiro Secretario da Sociedade das Sciencias Medicas da mesma cidade e Cirurgiao do Hospital de St. José. 8vo. pp. 61. Lisboa, 1867.

A *Study of Parietal Hernias of the Bladder and Incarcerated Vesical Calculi*. By J. J. Da SILVA AMADO. Rewarded by the Medico-Chirurgical School of Lisbon in 1860, 1861, 1863, and 1864; Surgeon of St. Joseph's Hospital, &c. 8vo. pp. 61. Lisbon, 1867.

THE author of this brochure believes that, until the present time, parietal hernias of the bladder have not been studied separately from other lesions—that no one has watched attentively their evolution, appreciating the causes which produce them, the mechanism of their formation, the anatomical varieties they present, the signs by which they may be recognized during life, the diverse terminations of which they are susceptible, the therapeutic agents which may prevent or remedy them, and, for want of information, on these points, their position in the scale of morbid entities has not been determined.

He says that hernias are dislocations in which the order of superposition of layers or planes of a determined region is altered. In regions in which hernias are formed there may be always observed a cavity inclosing or not solid contents, and a parietes establishing the limits of the cavity, constituted by the superposition of different layers. When there exists a contained and organized solid which is dislocated from the relation it holds with the layers which form its parietes, projecting from the cavity in which it is lodged, a *visceral hernia* is produced; these alterations have been carefully studied. When the different planes which constitute the parietes are deviated from the normal order of superposition, there is *parietal hernia* which has been much less studied. To the latter, when seated in the bladder, he now gives exclusive attention.

Houstet, in the past century, observed some cases of hernias inclosing calculi, and published an excellent memoir on the subject, denominating them *encysted stone of the bladder*.<sup>1</sup> Others, having observed small and multiple hernias, termed them *cellular bladders*. Large hernias, equalling or exceeding the size of the organ, were called *multiple bladders*. Observing that those hernias which are always accompanied by hypertrophy of the muscular tunic were denominated *columnar bladders*.

Finally, some writers, remarking the defects of this vicious nomenclature, and despairing to find an appropriate denomination for them, preferred a somewhat long paraphrase, but which described the material alterations: they designated them *hernias of the mucous membrane through the muscular coat*.

A minute description of a case of non-complicated hernia of the bladder is given as a suitable preliminary to the author's remarks.

The bladder was taken from an individual seventy-six years of age, who made no complaint of the urinary passage; died Feb. 18, 1863, of an encephaloid of the mesentery, which had no relation of contiguity with the urinary apparatus. The urine examined a few hours before death contained a moderately abundant deposit of crystals of uric acid of the primitive form. The bladder extended 0m.08, beyond the horizontal rami of the pubis, was flattened in an antero-posterior direction, and presented diverse tumours of an ellipsoidal form, of different sizes, the most voluminous being as big as a pigeon's egg; almost all were systematically inserted in the two sides of the reservoir, were translucent, and the liquid which flowed within the cavity of the reservoir could be perceived; there was no concretion in either of them, and *attentive examination of their walls showed a few muscular fibres—some elliptic, others parabolic*.

*External Surface of the Bladder.*—On the anterior face were numerous muscular fibres, forming contiguous bands, the middle ones rising directly 0m.06 to the fundus of the bladder, where they were hidden by the lateral bands which, rising almost parallelly with those, curved in the upper part to cross each other at the median line.

The fibres on the posterior part are all longitudinal and parallel; they reach the fundus of the organ, where they disappear, being reflected beneath archiform fibres of the anterior face. Some of the most external fibres turn forwards to strengthen the lateral fibres of the anterior face. At the sides the fibres have an arrangement which results from the direction of the external, anterior, and posterior fibres, necessarily increasing them, which separate the bands more, chiefly next the fundus and near the vesical neck; and from these circumstances hernias of the mucous membrane occur almost exclusively at the sides, and are symmetrically disposed, the most voluminous being near the neck and fundus.

*Internal Surface.*—Here are observed muscular bands, which stand in relief beneath the mucous membrane, running in different directions, and forming crypts or fossæ which remind us of the arrangement of the internal surface of the cardiac ventricles. On the anterior face are bands in three directions, transverse, oblique, and longitudinal. The most voluminous are transverse, being separated 0m.01 more or less; they bifurcate in oblique rami which go to join proximate bands, forming with similar bands orifices through which the mucous coat covering this surface had insinuated itself. From some of these transverse fleshy columns issue longitudinal fibres, arranged in bands of little volume, but more compressed than the oblique, and traverse almost the whole of this surface, passing above the columns; some of the longitudinal fibres seem to be independent of the transverse fossæ. These openings, more than fifty in number, are of various forms and dimensions, depending upon the different obliquity of the bands and proximity of the bifurcations; the largest are near the sides, where they are elongated in a transverse sense; near the fundus, where the horizontal bands are contiguous and less voluminous, openings are not observed. On the posterior face the transverse bands are less abundant in fibres, and closer than on the anterior face, and also cross their fibres, giving origin to very short oblique bands. Above these bands are noted longitudinal fibres, which are directed from the neck towards the fundus, and radiating over the

<sup>1</sup> Mémoires de l'Académie Royale de Chir., 1761, tom. i. p. 395.

whole of the inferior half, converge in the middle in two principal trunks, which immediately expand towards the fundus; one of these trunks is much more abundant in fibres than the other. From this arrangement it results that the horizontal fibres are hidden in the inferior half by the longitudinal fibres, which form by their contiguity a membrane, as it were, of triangular shape, corresponding to the *bas fond*, where there are, however, no fossæ through which the mucous membrane may insinuate itself; an arrangement similar to that observed in the fundus. On the other hand, in the intermediate part—that is, between the fundus and the *bas fond*, are seen some openings smaller than the most noticeable on the anterior face, but their number does not exceed twenty. The sides possess the characters of the anterior face in an exaggerated degree.

Parietal hernias of the bladder may occur at any part of the organ, but authors are not agreed as to where they most frequently exist. Our author supposes that in order of frequency it may be stated that they occur on the sides, anterior face, posterior face, and fundus; and seldom, if ever, in the *bas fond* or *trigone*. The volume of these hernias varies from a slight elevation of the external surface to a size greater than that of the whole organ; but of this last, instances are rare. One case is recorded in which the volume of the hernia was six times that of the bladder. In the museum of the medico-chirurgical school of Lisbon there is a piece showing a single parietal hernia of the bladder, having a lateral insertion, which is nearly double the capacity of the organ.

The number of parietal hernias varies. Sometimes there is only one, which ordinarily acquires considerable dimensions, and, at others, there are very many in the same bladder. The hernial tumour is composed of the vesical mucous membrane, and is entirely destitute of muscular fibres. These sacs contain urine, and frequently calculi.

These vesical hernias are attributed to obstructed micturition from enlargement of the prostate, or vesical or urethral calculi.

In the author's opinion, diagnosis of hernias of the bladder of considerable size is possible, although difficult. If the hernia is single and voluminous, or situated at the most elevated part of the organ, so as to project above the horizontal rami of the pubis, there is felt a tumour in the hypogastric region of greater or less volume, which will increase in the intervals of micturition, and often manifest fluctuation or undulation to the touch, and emit a dull sound. Frequently the tumour will be deviated from the median line, and in some rare cases the bladder distended by urine may be felt at the same time.

Rectal and vaginal touch will sometimes enable us to recognize the existence of one or more hernias, particularly if they contain calculi. In these rare cases stones may be discovered by catheterism. By this mode of exploration the expert surgeon may recognize the fleshy columns; recollecting, however, that the sense of resistance from these fleshy columns may be confounded with that due to the presence of vesical calculi, and lead to error. The bladder and tumours formed by hernias are augmented by an injection carried into the organ.

Patients experience immediately after evacuating the urine contained in the bladder a renewed call to urinate, and, unable to satisfy it without change of position, they press upon the hypogastrium and contract the diaphragm and abdominal muscles to compress the hernial tumour, which is inactive.

Dr. Amado cites a mode of diagnosis described by Civiale, as follows:—

"Having carefully explored the abdomen and rectum, introduce a sound into the bladder and permit the contained urine to flow. The instrument being secure, cause it to penetrate a short distance and then withdraw it to the same extent, alternately. Invite the patient to incline himself at short intervals to the right and to the left; if liquid flows, ask him to cough, compress the hypogastrium and note carefully if urine flows; then cease the pressure to renew it quickly, and ascertain whether a new portion of liquid escapes.

"This done, inject into the bladder sufficient water to distend it, till the patient experiences an intense desire to urinate, and when it is voided, repeat the same manipulations. If an identical result is produced a certain number of times—that is, if proceeding in the manner just described, the urine or injected liquid flows, at short intervals, in small quantities or in interrupted jets—Civiale supposes the existence of cells, inasmuch as in a normal condition all the liquid

contained in the bladder escapes by the sound without interruption, particularly when the hypogastrium is pressed and the patient assists with his own efforts. This practice is recommended on the supposition that no tumour is discovered in the hypogastrium, for the presence of a prominence or bursa, which disappears with the expulsion of the liquid and reappears with the injection, converts conjecture into certainty."

The treatment recommended in such cases is first to remove any obstacle to the free flow of urine which may exist, and then avoid distension of the bladder and the cells by a regular and methodical use of the catheter, so as to entirely empty both. Nélaton, however, advises in hypertrophy of the muscular coat with concomitant parietal hernias, after removing the cause of retention, that the patient shall retain his urine as long as possible, in order to distend the parietes of the organ, and to assist the distension by injections into the bladder. By such means he proposes to obviate a secondary inconvenience—diminution of the capacity of the bladder—without heeding that he is purposely maintaining the supposed cause of the disease.

The author devotes a chapter to the consideration of vesical hernias, complicated with contained calculi, but all derived from the writings of others.

W. S. W. R.

ART. XXXIV.—*On the Distinctive Characters of External Inflammations; on Inflammatory or Sympathetic Fever, and the Results of thirty-six years' Experience of the Effects of Bleeding, ascertained from private practice only.* By J. H. JAMES, F.R.C.S., etc. etc. etc. 8vo. pp. viii. 104. London: John Churchill & Sons, 1867.

READING this book has left a painful impression on our mind. Mr. James has, in days gone by, done good service in the field of surgical literature (witness his papers on amputation in the 17th and 18th volumes of the *Provincial Transactions*), and we could wish that he had been content to rest with his well earned laurels, for we cannot think that the present publication will add anything to his reputation. While we yield to none in our admiration for the professional achievements and professional writings of our forefathers, we cannot be blind to the fact that medical science has made great and real advances within the last twenty or thirty years; and we must believe that a writer who persistently and consistently ignores everything modern, will neither benefit his readers nor obtain glory for himself.

If we were to choose two subjects, one in physiology and the other in pathology, to illustrate the very great progress of medical science in our own day, we could perhaps scarcely do better than to name the doctrines of reflex action (with its corresponding modifications of sensibility, nutrition, and secretion), and that of pyæmia (so-called), and its allied disorders. These subjects are so familiar to our readers from the labours of eminent writers, both at home and abroad, that we shall merely mention that Mr. James speaks very slightly of the views of Dr. Marshall Hall (ignoring absolutely the investigations concerning the nervous system made since his time), and prefers to fall back upon the vague notions of "sympathy" which prevailed in the beginning of this century, and which he himself confesses are insusceptible of proof. With regard to pyæmia, Mr. James appears to be blissfully unaware of the labours of modern pathologists, either German or English; he considers it an affection rarely met with except in cases of phlebitis after venesection, and has no hesitation in declaring it to be due to the entrance of pus into the general circulation.

As for the more practical portions of Mr. James' volume, surely his readers do not require to be told that carbuncles may be treated by crucial incisions, or that the evacuation of the contents of deep-seated abscesses is often attended with a great diminution of constitutional disturbance. They may be more surprised to learn that in ordinary phlegmonous inflammations it is not wise to attempt to induce resolution, and that when pus has formed it is improper to

evacuate it by an incision; the reason being that these "plegmons" are "an effort of nature to relieve (in some unknown way) a constitutional error," and that they should, therefore, not be interfered with.

The last part of Mr. James' volume contains some points of interest. In 36 years Mr. James bled 183 persons, with a mortality of ten per cent. In the first 18 years the numbers were 157 with 16 deaths, and in the last 18 years only 26 with 2 deaths. Our readers may be surprised to learn that general bleeding is preferable to local, for the reason that it requires the abstraction of less blood, and "that large and sudden losses of blood do not prove permanently injurious." The latter proposition Mr. James tries to prove by the facts observed in military surgery and in obstetric practice; we question his premises as regards the surgery of war, and confess that we do not see the analogy between the act of parturition and cases of (*e. g.*) pneumonia.

Mr. James' experience, as far as it goes, seems to us to favour the view that there has been a "change of type" in prevalent diseases, a view which we may add has always appeared to us to be both reasonable and satisfactory. Mr. James himself thinks "that bleeding has been in times past, is even now, and probably will be a remedy most valuable wherever the population is of a healthy and vigorous standard."

We have rarely read a book which contained so many and such grave misprints as that before us. For this Mr. James is not to blame (for we learn from his preface that he is almost blind), but the publishers certainly have not in the present instance done justice either to their author's or to their own reputation.

J. A., JR.

ART. XXXV.—*Clinical Lectures on Diseases of the Urinary Organs.* Delivered at University College Hospital by Sir HENRY THOMPSON, Professor of Clinical Surgery, and Surgeon to University College Hospital, etc. 8vo. pp. 204. Philadelphia: Henry C. Lea, 1869.

THE twelve lectures contained in this volume were reported verbatim by a practised shorthand writer, whose copy was then corrected by their distinguished author. In a somewhat abridged form they have already been published in the *Lancet*, and are therefore doubtless familiar to many of our readers. We do not intend to go into a full examination of Sir Henry Thompson's opinions upon all the subjects which he discusses, but shall content ourselves with noticing a few salient points, indicating particularly the topics upon which his views differ from those held by the majority of surgeons. Lecture I., which is full of practical value, treats of the diagnosis of urinary affections. With regard to the endoscope our author says: "I may tell you at once, that if a man has a good and a tolerably practised hand, with a fair share of intelligence, I do not think he will gain a great deal by the endoscope; and if he has not, I think it will be of no use at all. There are some few cases in which he may find it of value, but do not expect that the endoscope is going to work any marvels in the diagnosis of surgical diseases of the urinary organs."

In Lecture II. the important subject of urethral stricture is taken up, and Sir Henry Thompson begins by objecting to the terms so frequently used, "inflammatory" and "spasmodic stricture." With regard to the latter, he says: "I will tell you what spasmodic stricture is. It is exceedingly useful as an excuse for the failure of instruments. It is a refuge for incompetence." When it is decided to attempt dilatation of a stricture (and Sir Henry Thompson urges very strongly that no more dangerous mode of treatment should be adopted until this has been fairly tried and has failed), our author expresses his decided preference for flexible instruments over the metallic. In his earlier life, influenced by the teachings of Liston, Sir Henry Thompson advocated the use of the silver catheter, instead of that made of gum; further experience has, however, induced an entire change in his views upon this subject. Full directions are given as to the mode of using the various forms of gum catheter, so

as to render them most efficient; but for these instructions we must refer our readers to the volume itself. The following sentences, though somewhat startling, contain, it must be confessed, a great deal of truth: "Now, it may appear to you very heterodox, but I advise you, in passing an instrument, to forget all about your anatomy. You are taught it over the way, and it is most important that you should know it; but, in passing an instrument, forget all about the different regions. Think nothing about the deep fascia, the membranous portion, or the compressor urethræ. A solid instrument is especially dangerous in the hands of an anatomist; he will push it the way he thinks right, as if all urethras were exactly of the same form, and did not vary as much as noses do, or other features. This used to be the pretext for preferring the solid instrument; it was said, 'You want to know exactly your anatomy, and pass the instrument accordingly.' I pity the patient who has a solid instrument thrust into his body by a knowing man at anatomy."

In Lecture III. the subject of stricture is continued, and our author objects to the term "impermeable stricture." He says, very truly, that wherever the urine can pass outwards, the stricture is *permeable*. Sir Henry Thompson has never had occasion to perform perineal section, and we gather from this chapter (though he does not assert it in so many words) that he has never permanently failed in the introduction of a catheter. To this we can only say that we admire his skill, and wish that surgeons generally were as successful as he is. But, looking at the matter in a practical way, we cannot help seeing that, as all patients with stricture cannot go to Sir Henry Thompson, and as ordinary surgeons do occasionally fail even after the most prolonged and careful attempts at catheterization, there must be some plan for relieving those patients whose strictures are impermeable to the catheter, if not to a few drops of urine; and of all the means which have been invented for the purpose, we confess that perineal section seems to us the best. Dilatation, simple or continuous, internal urethrotomy from behind forwards (as recommended by our author), and Mr. Holt's splitting operation, all require the previous introduction of an instrument. But it is precisely for those cases, where no instrument at all can be passed, that perineal section seems to us desirable; we regard it as safer than either the use of caustics, internal urethrotomy from before backwards, or forced catheterization.

Lecture IV. treats of hypertrophy of the prostate and its consequences. Sir Henry Thompson's views upon this important topic are doubtless familiar to our readers from the notices which have appeared in this Journal of the successive editions of his excellent work on diseases of the prostate; and hence we shall not dwell upon this lecture, but pass to the fifth, which treats of retention of urine. In cases where it is impossible to introduce a catheter, our author recommends puncture of the bladder either through the rectum or above the pubis, instead of the old "*boutonnière*" operation in the perineum. Believing, as we do, that in many of these cases the operation of perineal section is advisable as a means of treating the stricture independently of the superadded condition of retention, we cannot but regard the latter complication as an additional reason for resorting, without delay, to the procedure, which our author himself states had the authoritative sanction of both Liston and Guthrie.

Lecture VI. is upon extravasation of urine and urinary fistulæ. In cases where there is an absolute loss of a portion of the urethral wall, Sir Henry Thompson has employed plastic operations with benefit. In one case where a large opening existed between the bladder and rectum, he resorted to an operation precisely similar to that practised in cases of vesico-vaginal fistula.

Lecture VII. treats of stone in the bladder. The importance of using a sound with a short curved beak, is dwelt upon, and plain and explicit directions given as to the method of sounding, and the choice of operation in case a stone is discovered. Lithotomy is to be preferred in children, and lithotripsy in adults; the only exception being in cases where the stone is very large, the diameter which forbids crushing being one inch for oxalate of lime calculi, and two inches for those of the uric acid or phosphatic varieties. The only contraindication from the state of the urinary organs is, according to our author, the existence of a bad urethral stricture.



Lecture VIII. is upon lithotrity, and contains a description, with woodcuts, of the author's improved lithotrite, which seems to us far superior to any other instrument with which we are acquainted.

Lecture IX. treats of lithotomy. A short but interesting historical sketch of the operation begins the lecture; we are rather surprised, however, to find no mention of the single *lithotome cachée* of Frère Côme, of which Dupuytren's double lithotome is a mere modification. With regard to the ordinary lateral operation, we cannot approve our author's advice that the surgeon should go in boldly, near to or into the staff. It may be, as he says, "very pleasant to feel that you touch the staff in that first incision," but we believe that it will usually be found better not to make any of those "wild stabs" which Mr. Holmes has so forcibly condemned, but to perform lithotomy with as much calmness and deliberation as any other operation in surgery.

Lecture X. on cystitis and prostatitis, gives very practical directions as to the mode of injecting the bladder—an operation which, as the author well says, may be very useful or very injurious, according to the way in which it is done.

Lecture XI. is on diseases of the bladder; paralysis; atony; juvenile incontinence, and tumours.

Lecture XII. is on hæmaturia and renal calculus.

These lectures are full of sound instruction, and may be profitably read by every surgeon. The following sentence expresses our author's estimate of a favourite remedy in this country as well as in Europe, and may serve as a specimen of the lively and epigrammatic tone which pervades the whole volume: "Here, in town, it seems to me that every man advises his neighbour, and on every pretext, to drink Vichy water—advice which is cheap, and of which the value, in most instances, by no means exceeds the cost."

From what we have said our readers will see that we are disposed, on the whole, to think very favourably of this volume. Even with regard to those points upon which we have felt compelled to differ from our author, we do so with much diffidence, and with a sincere acknowledgment of the great value of his opinions. The mode in which the volume has been prepared gives it the charm which attends the listening to a series of excellent clinical lectures; and yet the *ex cathedra* tone which is doubtless appropriate in the lecture-room, when reproduced in black and white, strikes us as too dogmatical, and as occasionally verging upon flippancy. We think Sir Henry Thompson would have exposed himself less to criticism had he himself written out these lectures, and not merely revised them for publication.

The book is handsomely printed, but contains several misprints.

J. A., JR.

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ART. XXXVI.—*Two Cases of Œsophagotomy for the Removal of Foreign Bodies: with a History of the Operation.* Second edition, revised, with an additional case, by DAVID W. CHEEVER, M.D., Adjunct Professor of Clinical Surgery in Harvard University, Surgeon to the Boston City Hospital. 8vo., pp. 83. Boston: James Campbell, 1868.

THOUGH this is called a second edition, Dr. Cheever's cases are here presented for the first time as an independent *publication*; for the previous edition, as we learn from the preface, was printed for private distribution only. Dr. Cheever has performed the operation of œsophagotomy on three occasions; twice being successful in removing the offending foreign body, the patients recovering, and the third time no foreign body being discovered, and an œsophageal fistula remaining when the report closes, six months after the operation.

Dr. Cheever includes in his list of successful operations two cases reported by Prof. Syme, of Edinburgh, which seem to us not fairly to be classed as cases of œsophagotomy, and which indeed were hardly so considered by the distinguished surgeon in whose practice they occurred. In the first case, an incision through the muscles and fascia of the neck permitted the escape of "a

small quantity of purulent matter," and the finger having been introduced "through the narrow passage thus detected," was "carried upwards and backwards to the posterior part of the gullet, where a piece of bone was felt protruding from the canal." The narrow passage referred to having been dilated, the foreign body was extracted with polypus-forceps, there being no indication that the œsophageal wall was even touched with the knife. In the second case, a deep-seated abscess was opened, and from this abscess (not from the gullet) was the foreign body removed. Both of Mr. Syme's patients, we may add, recovered within the fortnight, which they probably would not have done after an actual œsophagotomy.<sup>1</sup> They should, we think, be classed with the other cases of foreign bodies escaping from the gullet by means of suppuration, recorded by Arculanus, Flajani, Plater, Fleury, Houlier, Glandorp, and others.

Nor do we find that Dr. Cheever has been more accurate in writing the history of the operation than in the compilation of his table. Guattani's memoir was not first published in 1819, as would naturally be inferred from the statement on page 49, though an octavo edition of the *Memoirs of the Royal Academy of Surgery of Paris*, was issued in that year; the first edition of that valuable work, containing Guattani's paper, dates from the middle of the last century. Roland's case did not occur in 1819 (as said on page 46), nor does Velpeau, from whose work it is quoted, give that year as its date; our knowledge of the case is derived from a very brief notice in the volume of the *Memoirs of the Academy* already referred to, which, in the copy before us, bears the date of 1757.

Dr. Cheever's own cases are interesting, and form a valuable contribution to surgical literature; we must say, however, that we think a satisfactory history of œsophagotomy is yet to be written. Of the 39 pages which are devoted by Dr. Cheever to this part of his subject, fully 26 consist of quotations from other writers, and (as we have seen in the case of Velpeau) even these quotations are not remarkable for accuracy. Dr. Cheever's table contains only 25 cases, and two at least of these are wrongly included: such a small field might have been more exhaustively cultivated.

As far as the account of Dr. Cheever's own cases is concerned, his book, as we have already said, is of value; though we cannot but think the operation in his third case not justified by either the symptoms before treatment, or by the result. But looking at the volume as a monograph, professing to embrace all that is known about a most important operation (and in this light it appears to us that the author regards it) we fear it must meet with the same criticism which the learned Dr. Johnson bestowed upon Mr. William Hay's translation of the *Epigrams of Martial*: "I said," Boswell tells us, "I thought it was pretty well done, and showed him a particular epigram . . . He read it, and tossed away the book, saying: 'No, it is not pretty well.'"—[*Journal of a Tour to the Hebrides*, Thursday, October 28, 1773.] J. A., JR.

ART. XXXVII.—*A Treatise on Physiology and Hygiene; for Schools, Families, and Colleges.* By J. C. DALTON, M.D., Professor of Physiology in the College of Physicians and Surgeons, New York. With illustrations. 12mo. pp. 399. New York: Harper & Brothers. London: Sampson Low, Son & Marston, 1868.

THE author of this attractive little volume is already well known to the profession as a writer and teacher of acknowledged ability. His larger work, *A Treatise on Human Physiology*, is regarded as a standard authority both at home and abroad.

The present treatise is designed "as a means of instruction in physiology and hygiene for pupils and general readers, who have no previous knowledge on

<sup>1</sup> Syme, *Observations in Clinical Surgery*, pp. 91-95.

medical subjects." To this end, the author has avoided the use of all anatomical and physiological terms, the meaning of which is not explained in the text. His aim has been to present to the reader all the important facts of physiology in a clear and familiar manner, so simplified as to be readily appreciated by students of ordinary capacity; and yet so attractively arranged, as to insure a ready reception.

As the book is a treatise on *hygiène*, as well as on physiology, many interesting and important topics connected with the former science are found very naturally blended with the facts and illustrations pertaining to the latter. Such an arrangement, in a work of this character, designed for the non-professional reader, is, we think, very judicious, inasmuch as it stamps a practical character upon the book by enforcing many timely hints on the subjects of diet, exercise, ventilation, &c., which naturally grow out of the previous purely physiological discussions.

The work is divided into eighteen chapters, each of which is complete in itself; and to each one is appended a series of questions on the preceding text, an arrangement well calculated to impress the subject on the mind of the student. In these different chapters, we have found all the important facts of physiology, and many of those of hygiene, discussed and explained in a clear, forcible, yet familiar style, that must render its perusal by the student anything but a wearisome task. While each section presents its own peculiar attractions, we have been especially interested in the chapters which treat of Food, Digestion, and Absorption. The latter function is, we think, described and illustrated by the author in a particularly happy manner.

While according all due praise to this little treatise, we must not, in candour, omit to notice what we regard somewhat in the light of blemishes. On page 20 there is an inaccuracy in regard to the chemical composition of bones; the statement being that, "as a general rule, the bones are composed of about one-half animal matter, and one-half mineral substance." It would be more correct to say one-third animal matter, and two-thirds mineral substance. In dry bone (which has lost its 10 per cent. of water), the latter is almost the precise proportion.

Again, we notice that Professor Dalton ascribes to the saliva, in the function of digestion, merely a *mechanical* office—that of moistening the buccal cavity, and of so penetrating the mass of food as to render it soft and capable of being easily acted upon by the digestive fluids. He entirely ignores the usually admitted *chemical* property of converting starch into glucose. He states positively (p. 96) that "none of its (the food's) ingredients are as yet changed or decomposed; but they are all present in the masticated mass, though no longer distinguishable by the eye." This is certainly not the view of the majority of physiological authorities; indeed, it is almost peculiar to our author, who believes that the transformation of the amylaceous matters of the food into sugar is accomplished solely by the "intestinal juice"—the secretion of the follicles of Lieberkühn. Now, reasoning from analogy alone, one would naturally suppose that a secretion like the saliva, produced so copiously (amounting in the healthy adult to nearly three pounds a day), and from so many different glands, and also containing a notable amount of the peculiar nitrogenous principle, *ptyalin*, was destined for a higher purpose than the mere mechanical one of moistening the alimentary bolus. We may be sure that "Nature never creates anything in vain." Besides, repeated experiments have clearly demonstrated the fact of the rapid conversion of boiled starch into glucose, by the simple contact of the saliva. It is quite true that *any* mucous membrane—even that of the rectum or bladder—will effect this change, and doubtless, therefore, the secretions of the small intestines; but why deny a similar power to the salivary secretion, when it has been repeatedly verified by the best experimenters? Not the least notice, moreover, is taken of a similar transforming power in the *pancreatic* secretion, which is capable, in the fresh state, of converting more than four times its weight of starch into sugar. Indeed, by many authorities its action is regarded, partly at least, as supplemental to that of the salivary glands; though all agree that its chief intention is for the digestion of the fats. We do not object to an author stating his own views emphatically, especially where

he has shown himself entitled to respect; indeed, we believe that a teacher, to be successful, must enunciate his ideas *ex cathedra*; but on mooted subjects, it were perhaps wiser, and more modest, at least, to take some notice of the views entertained by the great majority of others.

We will only venture one other criticism, of a similar character, in relation to the author's doctrine of the secretion of bile. He entirely excludes this most important secretion from all share in the digestion of the food. "The bile passes through the alimentary canal, not for the purpose of assisting in the digestion of the food, but in order that its own ingredients may be changed and converted into other substances. The blood needs these substances for its nutrition, and they are accordingly produced by means of the biliary secretion." (p. 141.) In the above doctrine, Dr. Dalton is certainly not in accord with the highest authorities on this subject, nearly all of whom ascribe to the bile the power to assist in the digestion of fats. The experiments of Bidder and Schmidt, as quoted by Dr. Fenwick in his recent work on *Morbid States of the Stomach and Duodenum*, go clearly to prove that the bile is a very essential agent in the digestion of fats.

With these brief remarks, we take leave of Professor Dalton's excellent treatise; and very cordially recommend it to those for whose benefit it has been more especially prepared.

J. J. R.

ART. XXXVIII.—*Compendium of Percussion and Auscultation, and of the Physical Diagnosis of Diseases affecting the Lungs and Heart.* By AUSTIN FLINT, M. D. 18mo. pp. 36, 4th edition. New York: William Wood & Co., 1869.

THIS little Compendium, we are told in the preface, was originally intended for insertion in a Physician's Visiting Book. Circumstances have, however, induced the author to publish it in its present form; and in compliance with the wishes of his private pupils, and of others, it has recently been reprinted. It is not intended to be a substitute for the systematic treatises on auscultation and percussion, but simply as an aid in memorizing the physical signs.

The book is divided into two parts: In the first is given "A summary of pulmonary signs obtained by percussion and auscultation, their distinctive character and significance;" in the second, "The physical signs involved in the diagnosis of pulmonary affections."

Experience with students has taught us that very few recent graduates in medicine are thoroughly familiar with the different physical signs. To them, therefore, this little book, which may be conveniently carried in the coat-pocket, and which contains so much information, will be exceedingly valuable. It is scarcely necessary to add, that we have no criticism to offer upon the manner in which the distinguished author has done his work.

J. H. H.

ART. XXXIX.—*A Conspectus of the Medical Sciences: comprising Manuals of Anatomy, Physiology, Chemistry, Materia Medica, Practice of Medicine, Surgery, and Obstetrics, for the use of Students.* By HENRY HARTSHORNE, M. D., Professor of Hygiene in the University of Pennsylvania, &c., 12mo. pp. 1002. Philadelphia: Henry C. Lea, 1869.

THIS Conspectus will be found to be a very excellent and efficient text-book for the use of the student in his attendance upon a course of medical lectures. It presents, "in as brief a form and as clear a manner as possible," the indispensable elements of a course of medical studies as taught in the colleges, or conveyed

through the pages of approved text-books. The only claim set up for the present *Conspectus* is, a careful compilation of the generally received facts and doctrines in each of the branches of medical science embraced in it, and as close a condensation of the matter thus made use of, as was consistent with entire clearness and definiteness. The aim of the author, he assures us, has been, throughout the entire work, to secure both accuracy and lucidity in all its teachings, combined with as near an approach to completeness as the limits of his plan would admit, and this aim, it cannot be denied, he has succeeded in most successfully carrying out.

Dr. Hartshorne tells us, in his preface, "that in regard to authorship, the name upon the title page might be rather announced as that of the *editor* than of the writer of the work; since only three of the seven parts or manuals it comprises have been prepared by his hand; namely, those upon anatomy, physiology, and practice of medicine." The preparation of the others was intrusted to gentlemen whose special studies gave reason for confidence in their execution of the task in each case to the best advantage of the student."

D. F. C.

ART. XL.—*Outlines of Comparative Anatomy and Medical Zoology*. By HARRISON ALLEN, M. D., Prof. of Zoology and Comp. Anatomy in the University of Pennsylvania. 8vo. pp. 190. Philadelphia: J. B. Lippincott & Co., 1869.

THIS is a good compendium and useful guide to a course of lectures on the subjects therein treated. The leading facts in the Comparative Anatomy of Animals are so clearly, accurately, and concisely stated that the work will not only prove valuable for the readiness with which information is communicated, but also to remind one of that which may be forgotten. The classification adopted by the author appears to us to be in accordance with the present state of knowledge, both in its lesser and greater divisions. Taking into consideration the vastness of the science, its multitude and variety of facts, which have been taken into view in the preparation of the work, it is remarkably free from important errors. The portion on Medical Zoology is in more detail than the previous portion of the work, and must prove of interest to the medical student and physician. Nearly all animals having any reference to medical science are described. We recommend the book not only to medical students and practitioners, but also to those who are interested in natural history, and wish for more information than the general appearance, classification, and habits of animals.

J. L.

ART. XLI.—*An Essay on the Ligation and Management of the Umbilical Cord at Childbirth*. By A. F. A. KING, M.D., etc. etc. 8vo. pp. 37. Washington, D. C., 1867.

IN this essay Dr. K. strongly opposes the plan of ligating the cord, and the usual method of dressing the umbilicus in the new-born infant. After a very full exposition of the reasons which have led him to this opposition he details, step by step, the mode of treating the cord and navel pursued by him, with its attendant advantages. His objections to tying the cord at birth may be thus summed up: 1st. Ligation of the umbilical cord in the human infant is unnecessary, and for the following reasons; *a*, because it is not necessary on the birth of any other animal; *b*, because the supposed necessity for it, the prevention of hemorrhage, does not exist, as will become evident from a reference to the formation of the cord and the structure of its component vessels; as well as to the numerous recorded cases, in which no ligature was applied, and yet no fatal bleeding occurred; *c*, because to ligate for the sake of cleanliness is superfluous.

2d. Ligation of the umbilical cord is in many cases injurious. *a.* Because as has been shown in the text, it may be justly considered as the cause of *secondary hemorrhage* from the umbilicus. *b.* Because by preventing that flow of blood which should naturally take place from the umbilical vein, and thus giving rise to congestion of the liver—it produces *infantile jaundice*, and probably also *sclerema*. *c.* Because—by interfering with desiccation of the cord, and thus retarding its separation—it gives rise to *ulceration of the navel*, and not unfrequently *erysipelas*, *fungoid excrescence*, etc. *d.* Because—by maintaining the vessels of the funis in a state of congestion, it endangers the *inflammation of these vessels*, and also hinders their normal obliteration, thus laying a foundation for *umbilical phlebitis*, *erysipelas*, *jaundice*, *pyemia*, etc. *e.* Because—by preventing a normal escape of blood from the divided cord and thus causing *hepatic hyperæmia* and congestion of the portal vessels—it may lay the foundation for an innumerable list of serious maladies which, in the infant, would seem to be traceable to such congestion.

3d. That in some cases certainly, probably in not a few, ligation of the cord has been directly fatal. *a.* Because numerous instances of death are recorded, in which the fatal result was ascribed to ligation of the cord by the highest obstetrical authorities. *b.* Because it can be seen that in cases of still-born children the operation maintains the right ventricle in a state of distension—which otherwise would be relieved by a flow of blood from the hypogastric arteries—thus effectually preventing the renewal of the heart's action when it is stopped, or rendering the stoppage complete when it is about to cease. *c.* Because, in many instances, the child's life has been saved by the removal of the ligature, *when all other means* had failed.

Dr. K.'s management of the cord at birth, is, to wait before dividing the cord, until its pulsation has become feeble, or, when from any extraneous cause the separation of the child becomes necessary, to divide the cord below its pulsating portion, whether this be eight or ten inches from the navel, as the portion remaining may be shortened after the pulsation has ceased. The division should not be made with a sharp instrument, but with a pair of *dull scissors*, or what would be preferable with an *écraseur* constructed for the purpose. When the bleeding from the remaining end of the cord has ceased: the cord being very thick, with large vessels full of blood, and loaded with gelatinous matter, it is to be firmly held near the umbilicus with the finger and thumb of one hand, while by the other gentle efforts are to be made to squeeze out the blood, and the fluid portion of the gelatinous matter. The cord having in this manner been rendered flaccid and ribbon shaped, it is simply suffered to remain without any dressing whatever, hanging downwards, and resting on the abdomen of the infant.

While we are not prepared to dispute the accuracy of any of the statements made by Dr. K., we, at the same time, do not feel inclined to advise an abandonment of the practice of ligating the umbilical cord of the new-born infant. When done at the right time, and in the right manner, no possible harm can result from it. We have, on the other hand, certainly seen a hemorrhage to occur to an extent sufficient to produce at least pallor of the cheeks and lips, with diminished temperature of the surface, when the ligature has, from any cause, escaped from the funis in a new-born child.

D. F. C.

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ART. XLII.—*Syphilis and Local Contagious Disorders.* By BERKELEY HILL, M.B., Lond., F.R.C.S., Assistant Surgeon to University College Hospital; Teacher of the Use of Surgical Apparatus in University College, and Surgeon to Out-Patients at the Lock Hospital. 8vo. pp. 467. Philadelphia: Henry C. Lea, 1869.

THIS is an excellent work. The author is evidently thoroughly conversant with his subject, and has a happy facility in imparting his knowledge to others.

Our knowledge of venereal affections has made remarkable progress during the

present century. In 1810, Hernandez demonstrated gonorrhœa to be a local affection, and to have nothing in common with syphilis; in 1852 Bassereau showed clearly that the simple chancre is a local affection, and never infects the system. These facts may have been indicated before, but they cannot be considered as proven until the publications of these writers. They are scarcely second, in importance, to any in all medical pathology.

In his preface Mr. Hill says: "I have attempted to arrange in a systematic description of venereal diseases, the large contributions which recent research has brought to our knowledge. In doing so, I have striven to render the work more complete, while keeping it concise and suitable for the student as well as the practitioner.

"As the syphilitic virus is not now supposed to be the cause of all venereal sores, the local contagious ulcer, or chancre, is treated in a separate division of the book.

"Syphilis is a constitutional disorder from the first: the effects of the virus may penetrate any organ of the body while the disease is in progress, and continue perceptible until the poison grows inert or languishes in some local sequelæ. Not long ago it was impossible to describe the whole course of syphilis, for it is only recently that we have been able to assign to their true origin the numerous lesions which are now recognized as common sequences of the disease."

Our author's work is divided into five divisions. The first is called introductory, and contains two chapters, one giving a history of venereal diseases, and the other the modern views of these affections. The second, in thirteen chapters, treats of syphilis; the third, in two chapters, of chancre; the fourth, in three chapters, of gonorrhœa, and the fifth, of accessory venereal affections, as warts, herpes preputialis, paraphimosis, etc. etc.

The work is complete and concise—its arrangement adapting it for the instruction of students as well as practitioners. So far as syphilis is concerned, it gives a clearer idea of the disease, its course, and symptoms, as they are successively developed, than any other treatise on the subject we know of in the English language. The chapter on treatment is particularly worthy of commendation, on account of the admirable observations upon the use of mercury.

Those already acquainted with the great advances made in recent years in the pathology and treatment of venereal affections will be much gratified in the perusal of this work, and those who are not can nowhere find more correct and complete information than in these pages.

The work is well gotten up, on good paper, with clear type; it has a full table of contents at the beginning, and is completely indexed. W. F. A.

ART. XLIII.—*Joined Twins; their Obstetrical and Surgical Management, with Remarks.* By A. B. Cook, A. M., M. D. Prof. of the Principles and Practice of Surgery, Kentucky School of Medicine. Kentucky. 8vo. pp. 26.

THE most interesting portion of this essay is that which touches the question as to the propriety of an operation to sever the bond of union in joined twins, especially when this consists in a fusion of a greater or less extent of the parietes of the thorax or abdomen of the two children, or in a band extending from the thoracic or abdominal region of the one to that of the other. The author is of opinion that when the attachment involves any considerable portion of the abdominal or thoracic walls, so long as the twins continue in good health, an operation, under all circumstances, is questionable. Previous results do not justify its performance. When the union is formed by a band, as in the case of the celebrated Siamese twins, the only known pair now living in which this kind of union exists, the proper solution of the question as to the propriety of dividing the band is to be based upon the analogies between such cases and

others with similar attachments and the results of previous operations. In very few if in any can the result of the operation be decided upon in advance.

We may remark that the cause of joined twins is referred by Dr. C. to a germ abnormally compound from the beginning—the organs and parts composing the united twins proceeding directly from such compound germ without either separation or coalition of its parts, other than what occurs in the natural process of development.

D. F. C.

ART. XLIV.—*A Hand-Book of Uterine Therapeutics, and of Diseases of Women.* By EDWARD JOHN TILT, M. D., etc. etc. Third edition. 12mo. pp. 423. London: John Churchill & Sons, 1868.

The same, second American edition, thoroughly revised and amended. 8vo. pp. 345. New York: Appleton & Co., 1869.

THE American edition of Dr. Tilt's *Hand-Book*, it is stated in the preface, has been revised and amended by the author. The work is replete throughout with good sound sense, and well calculated, by its teachings, to lead to correct views as to the therapeutic management of uterine affections generally, and of some of the other leading diseases of women. It is too much the case at the present day to refer nearly all the maladies to which the human female is liable, to disease or displacement, or morbid curvature of the womb, and which is only to be remedied by the use of some instrument for the direct application of remedies to that organ, or for dilating or incising its os or cervix, or for rectifying its malposition, or reducing its abnormal curvatures. Dr. T. is far from disparaging the use of surgery in the treatment of the diseases of women, but believes that in a host of cases, where, by eminent practitioners, it is held to be our chief reliance, it is often worse than useless.

The main points developed in the work before us are, 1. The paramount importance of proper hygienic measures for the relief and cure of women's diseases. 2. The constitutional nature of many diseases of women, and the impossibility of curing them without constitutional remedies. 3. The manifest reaction of uterine diseases on the female system, and the impossibility of curing many uterine complaints without surgical measures. 4. The great value of therapeutics to assuage and cure diseases of women, and the belief in the value of remedial measures that are as old as medicine itself.

D. F. C.

ART. XLV.—*The Science and Practice of Medicine.* By WILLIAM AITKEN, M. D., Edin. *Second American, from the Fifth, Enlarged and Carefully Revised London Edition, adopting the New Nomenclature of the Royal College of Physicians.* London. By MEREDITH CLYMER, M. D., etc. etc. In two volumes. With maps, lithographic plate, and numerous illustrations on wood. 8vo. pp. 927–1079. Philadelphia: Lindsay & Blakiston, 1868.

IN preparing this fifth edition of his work on the "Science and Practice of Medicine," Dr. Aitken has subjected it throughout to a careful revision, and has made to it such additions, occupying in all upwards of one hundred pages, as seemed to him to be demanded in order that the treatise might embrace a general view of all the recent important improvements that have been made in every department of scientific and practical medicine.

They who would study the general outlines of the healing art, and the more important of its details, as taught and practised by the leading medical authorities of the day, will find the work a very excellent and faithful guide.

In the initial portion is an instructive sketch of all the important elements of



**General Pathology.** The rest of the treatise is divided into three parts. The first treats of Systematic Medicine, and Nosology, or the Classification of Diseases; the second is devoted to a consideration of the Nature of Diseases, Special Pathology, and Therapeutics; the third embraces Medical Geography, the geographical distribution of health and disease. In these divisions, respectively, will be found a very fair exposition of the facts and observations, the experience and its results, of the leading cultivators of the science and practice of medicine, up to the present period, well arranged and clearly expressed.

The American editor has faithfully performed his part, and has enhanced to no trifling extent the value of the original work. His additions are numerous, embracing a notice, more or less extended, of many important maladies not treated of by the author. Dr. Clymer claims that the additions to the present American edition would amount in space to over 500 pages of the last London edition. Besides the additions made to the author's text, there have been introduced by the editor thirty-six additional articles, several of them on subjects not heretofore to be met with in any text-book of practical medicine.

Whether as a manual for the use of the student or a handy book of reference for the young practitioner, the work of Dr. Aitken, in the edition of Dr. Clymer, may be confidently recommended, without fear of its imparting to the first erroneous principles, whether in theory or in practice, or of its disappointing the latter in his search after a fair exposition of the present state of medical opinion in respect to any leading question connected with either etiology, pathology, or therapeutics.

D. F. C.

ART. XLVI.—*Vaccination Impartially Reviewed. Being one of the Prize Essays sent in to the Ladies' Sanitary Association.* By FERDINAND E. JENCKEN, M. D., M.R.C.P. "Pervarios usus artem experientia fecit exemplo monstrante viam." MANLIUS. 8vo. pp. 28. London, 1868.

IN the general estimate of the value of vaccination, as a preventive of small-pox, and of the causes by which the certainty and permanency of its prophylactic efficiency is more or less impaired or entirely destroyed in a large number of cases, as laid down by Dr. J. in the pamphlet before us, we entirely agree, and we have no desire to call in question his views as to the danger of the introduction of other diseases into the human organism by the employment of impure matter or that derived from diseased subjects. Nevertheless we do not believe the essay of Dr. J. to be one well adapted to place vaccination in its most favourable light before the public at large, to remove their prejudices in respect to it, and to convince them of the safety it confers when properly performed, with the product of pure, fresh, and genuine virus, and carefully watched so that it shall run a regular course and produce a sufficiently intense and genuine influence upon the system. The uncertainty of the continuance of the prophylaxis from variola, afforded by vaccination, and the large number of circumstances which may cause it to be only temporary or altogether void, and the danger of a constitution, originally sound, becoming blighted or profoundly diseased by the presence in the lymph employed of an unrecognized virus, are brought out in such bold relief and so strongly enforced, while scarcely any reference, or at best only a passing one, is made to the ease and certainty with which nearly all the causes that may render vaccination no protection, or only a partial or temporary one against smallpox, may be avoided in almost every case, that it seems to us the pamphlet of Dr. J. is calculated rather to deter people from submitting their children to vaccination, than to convince them of its invariable safety and, under every point of view, its inestimable value as a hygienic agent, when carefully performed with pure, fresh, and active virus.

D. F. C.

ART. XLVII.—*Treatise on the Diseases of the Ear, including the Anatomy of the Organ.* By ANTON VON TRÖLTSCHE, M. D., Professor in the University of Würzburg, Bavaria. Translated and edited by D. B. ST. JOHN ROOSA, M. A., M. D., etc. etc. Second American, from the Fourth German Edition. 8vo. pp. 565. New York: William Wood & Co., 1869.

WE are pleased to announce the appearance of this translation by Dr. Roosa of the fourth edition of the very excellent treatise of Professor Von Tröltsch on the diseases of the ear. Although nominally only a revised edition of its predecessor, it is, in fact, as the American translator and editor very correctly remarks, to a great extent, a new work. The fourth edition, besides the thorough revision which it has undergone—in many parts having been entirely re-written—has received, at the hands of the author, large and important additions. It is admirably adapted, in its present form, to serve as a faithful textbook to those who would desire to become acquainted with the etiology, pathology, and proper management, whether by surgical or therapeutic means, of the several diseases of the auditory organ, as illustrated by the careful study to which these important questions have recently been subjected by European inquirers, and under circumstances the best adapted for their satisfactory solution.

The additions made to the text by the American editor are neither few nor unimportant; they are, upon the whole, well adapted to enhance the value of the treatise: while the copious index renders easy a reference to any particular subject embraced in the thirty-one lectures into which it has pleased the author to divide his treatise.

D. F. C.

ART. XLVIII.—*Constipated Bowels; the Various Causes and the Different Means of Cure.* By S. B. BIRCH, M. D., etc. etc. From the third London edition. 12mo. pp. 181. Philadelphia: Lindsay & Blakiston, 1868.

DR. BIRCH has presented us with a judicious little treatise on a very common complaint, especially in our cities and manufacturing communities, which, when not the direct result of disease of the stomach and bowels, of the liver, or of some portion of the nervous centres, or of an inherited inertness of the intestines, is dependent in the great majority of cases on the neglect of a regular and judicious diet and regimen. In the treatise before us, Dr. B. has taken a correct view of both the pathology and therapeutics of an ailment which, though seldom of itself fatal, is always troublesome, and, when it is entirely neglected, is liable to undermine, sooner or later, the general health. He puts forth no pretensions to any great originality or novelty. The great principle of successful treatment, namely, the management of each case on its own merits, in connection with its special cause and any particular complications, has been very steadily maintained. Routine, in every shape, is condemned. The abuse of aperients, that most common and most injurious of all one-sided errors in the management of costiveness, is held up in its true light, while, at the same time, the occasional necessity of temporary recourse to gentle aperients, and still more rarely, to prompt and energetic cathartics, has been fully admitted.

If the present treatise shall accomplish no other end than to convince its readers of the fact, that the lamentably too prevalent habit with the members of our profession, but more especially with the public at large, of resorting to purgative medicines on every slight emergency, is to be received as one of the most flagrant causes of obstinate costiveness, it cannot fail to produce a very large amount of good.

D. F. C.

# QUARTERLY SUMMARY

## OF THE

# IMPROVEMENTS AND DISCOVERIES

## IN THE

# MEDICAL SCIENCES.

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### ANATOMY AND PHYSIOLOGY.

1. *Temperature of the Human Body in Health.*—At a meeting of the Royal Society (February 12th, 1869) a paper by Dr. SYDNEY RINGER and the late A. P. STUART was read; of which the following is an abstract:—

These observations were conducted by the authors in order to learn with minuteness the fluctuations of the temperature in health. They were performed on persons of different ages, and were in many instances continued through the night and day. The temperature was noted every hour, and on many occasions much more frequently than this. The following subjects are discussed in this communication: 1. The daily variation of the temperature. 2. The effects of food on the temperature. 3. The effects of cold baths on the temperature. 4. The effects of hot baths on the temperature. From these observations the authors have drawn the following conclusions: The average maximum temperature of the day in persons under 25 years of age is  $99^{\circ}.1$  Fahr.; of those over 40,  $98^{\circ}.8$  Fahr. That there occurs a diurnal variation of the temperature, the highest point of which is maintained between the hours of 9 A. M. and 6 P. M. At about the last-named hour the temperature slowly and continuously falls, till between 11 P. M. and 1 A. M. the maximum depression is reached. At about 3 A. M. it again rises, and reaches very nearly its highest point by 9 A. M. The diurnal variations in persons under 25 amounts, on an average, to  $2^{\circ}.2$  Fahr.; but of persons between 40 and 50 it is very small, the average being not greater than  $0^{\circ}.87$  Fahr., nay, on some days no variation whatever happens. In these elderly people the temperature still further differs from that of young persons; for in the former the diurnal fall occurs at any hour, and not, as in the case with young persons, during the hours of night. Concerning the influence of food on the temperature of the body, the authors have concluded that none of the diurnal variations is in any way caused by the food we eat. The experiments to prove this conclusion are very numerous. Some were made with the breakfast, others with the dinner and tea, but all point to the conclusion just stated. This important question is very fully discussed in the section devoted to it. By cold baths both the surface of the body and the deep parts were lowered in temperature. The temperature of the surface was in some instances reduced to  $88^{\circ}$  Fahr.; but the heat so soon returned to all parts as to show that the cold bath is of very little use as a refrigerator of the body. The cold bath produced no alteration in the time or amount of the diurnal variation. This began at the same hour, and reached the same amount as on those days when no bath was taken. By hot-water or vapour baths we were able to raise very considerably the heat of the body. Thus, on some occasions, when using the general hot bath, the temperature under the tongue was noted to be between  $103^{\circ}$  and  $104^{\circ}$  Fahr., a fever temperature. The body being heated

considerably above the point at which combustion could maintain it, we were enabled to learn with what rapidity heat may be lost, simply by radiation and evaporation. For these results we must refer to our paper. Our experiments prove that hot baths in no way affect the diurnal variation of the temperature.—*Scientific Opinion*, Feb. 17, 1869.

2. *Causes of the Depression of Temperature which results from Suppression of the Dermal Perspiration.*—LASCHKEWITSCH observes that the fall of temperature in animals whose skins have been varnished is well known, and believes that this is to be referred to their losing their heat more rapidly, consequent upon the hyperæmic condition of the bloodvessels of the skin and subcutaneous connective tissue. Varnishing the surface acts just in the same way as paralysis of all the vascular nerves. Hence, therefore, the smaller the animal the sooner it dies; whilst, on the contrary, if a varnished animal (rabbit) be wrapped in wool and kept warm no ill result follows. The cause of death, therefore, is not, as stated by Gerlach and others, asphyxia.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1869, from *Reichert's Archiv*, 1868.

3. *Temperatures in Healthy Children.*—MR. FINLAYSON exhibited in the Manchester Medical Society (November 4, 1868), an elaborate series of tables of Temperatures in Healthy Children.

They comprised two hundred and eighty-one observations on eighteen different children, of ages varying from twenty months to ten and a half years; and he summarized his conclusions as follows: 1. The daily range of temperature is greater in the healthy child than that recorded in healthy adults. The author's observations gave a mean of  $2^{\circ}$  F.; those of Davy, Gierse, and Frölich, on themselves, about  $1^{\circ}$  F. 2. There is, invariably, a fall of temperature in the evening, amounting to one, two, or three degrees. 3. This fall may take place before sleep begins. 4. The greatest fall is usually between 7 and 9 o'clock (at least, under the conditions of life usually observed in hospitals). 5. The minimum temperature is usually observed at or before 2 A. M. 6. Between 2 and 4 A. M., the temperature usually begins to rise, such rise being independent of food being taken. 7. The fluctuations between breakfast and tea-time are usually trifling in amount. 8. There seems to be no very definite relationship between the frequency of the pulse and respirations and the amount of temperature, the former being subject to many disturbing influences.—*British Medical Journal*, January 16, 1869.

## MATERIA MEDICA, GENERAL THERAPEUTICS, AND PHARMACY.

4. *Value of the Preparations of Iron in the Treatment of Inflammation and some other Febrile Conditions.*—DR R. W. CRIGHTON states (*Brit. Med. Journ.*, Jan. 9, 1869) that the occurrence of an extensive epidemic of diphtheria in 1859 gave him "a wide field for testing the effects of iron in this disease; and after treating a few cases, I was led to adopt a combination of the muriated tincture of iron in doses, varying according to age, of from four minims to ten or fifteen minims, with one to two drachms of the liquor ammoniæ acetatis (*Edinburgh Medical Journal*, 1860) every two or three hours. The resulting compound I have ever found invaluable in the *early stage* of all inflammatory affections. Free action of the skin is quickly produced, the pulse is lowered, and in many cases, as in tonsillitis, the inflamed organ recovers its natural condition as quickly as the skin does when the muriated tincture is administered uncombined in a case of erysipelas. In the early stage of typhoid fever, I know of no means more likely to mitigate the symptoms and calm the patient than the combination of the muriated tincture of iron and the acetate of ammonia, but in larger doses than seem to be tolerated in most other diseases. A medical friend, to whom I recommended the employment of the combination

some years ago, has since assured me that he has observed many cases of typhoid fever apparently cut short by its use, and that he never omits it at the commencement of the treatment in any case.

"In scarlatina, the early use of the ferruginated diaphoretic, and afterwards of the iron singly, or in combination with quinia and nitric ether, will, in most epidemics, effect all that can be accomplished by medicines. In the inflammatory form of Bright's disease, occurring from sudden chill, I have seen a speedier convalescence obtained by means of this combination than by any other plan of treatment.

"I will only notice one other class of cases where it has, in many hands, proved eminently useful; viz., in puerperal metritis and peritonitis. When given at the very commencement, in conjunction with the application of turpentine stupes to the abdomen, a few hours will often find the patient transferred from a state of extreme suffering and danger into one of comparative ease and safety.

"The therapeutic value of the combination of the muriated tincture of iron with the acetate of ammonia in the diseases in which I have employed it is, I believe, due to its power of establishing early and free diaphoresis, of stimulating the capillaries to contraction, and furnishing to the blood the means of renewing its red corpuscles, which undergo an unusually rapid disintegration in inflammatory and febrile diseases. But, whatever the true explanation of its mode of action may be, the curative effects of the combination I consider to be so great, as to induce me to state that, in many of the diseases in which I have used it rather extensively, I believe there are no other therapeutic means at present in use which are capable of furnishing equally valuable results. I would wish it to be distinctly understood that I by no means ignore the many other indications which have to be followed in the treatment of inflammation, such as the relief of pain by means of opiates, the use of bloodletting in certain cases where there is great danger from over-distension of the venous system and the right side of the heart, and the good effects of the preparations of iodine and mercury in rousing the absorbents to remove exudations and effusions when these have occurred. All that I desire to claim for iron, is that it is entitled to be considered *one of the chief indications* to be pursued in its treatment."

5. *Peroxide of Hydrogen*.—Dr. B. W. RICHARDSON sums up the therapeutic action of this article in the following words: "The solution of the peroxide of hydrogen may be fairly considered a medicine which promotes glandular secretion generally, quickens the action of iron, and which, to a certain extent, represents mercury and iodine as a specific remedy for syphilis. Problematically it may be considered as having an influence on nervous function, preventing or reducing over-action. It deserves on this ground extended trial in epilepsy. It is useful as a means of relief in dyspnoea in cases where there is great destruction of the lung and deficient oxidation; but whether its effect is due to the direct addition of oxygen to the blood, or to a sedative action on the nervous centres, or to the promotion of secretion from the liver and kidneys, and the removal of temporary congestion, is not known.

"*Mode of Administration; Dose*.—The solution of the peroxide containing ten volumes of oxygen is the best form for medicinal use; a trace of hydrochloric acid in the solution is of advantage, as the acid helps to retain the oxygen. I prefer always to prescribe the solution simply with distilled water, for although there are many medicinal substances with which it is compatible if they are chemically pure, it is best not to run the chance of displacement of the oxygen by admixture.<sup>1</sup> The ordinary dose for an adult is from one drachm to four, but this may be gradually increased to six drachms or even an ounce.

<sup>1</sup>To oblige me, Mr. Robbins, of Oxford Street, who has for a long time made the peroxide of hydrogen, tested the compatibility and incompatibility of the peroxide solution with other medicines. He reports it as incompatible with all vegetable tinctures, and with the citrates and tartrates of the alkalies and of iron. With hydrocyanic acid it forms in a few days beautiful crystals of oxamide. With sulphate, chloride, and nitrate salts, decomposition is slow; but on the whole it is best in every case to prescribe the solution direct—i. e., without admixture.

A free quantity of water should always be mixed with the solution when it is to be taken; too concentrated, it leaves a caustic metallic taste in the throat, and causes eructation."—*Medical Times and Gazette*, Dec. 19, 1868.

6. *Ozonic Ether*.—Dr. B. W. RICHARDSON states (*Med. Times and Gazette*, December 19, 1868) that "the substance called ozonic ether, and which is now creating so much interest in the profession, is peroxide of hydrogen in ether. The mixture thus formed was first made by myself; I was testing the action of the peroxide of hydrogen on various substances, organic and inorganic, and having one day added a strong solution of the peroxide to some ether, I was surprised to find that a portion of the peroxide seemed to pass to the ether, the ether, when decanted off, having a very strong taste of peroxide, and yielding oxygen freely when treated with oxide of manganese. On being kept, the ether was discovered to undergo further change, the oxygen becoming more stable and fixed. The addition of a little alcohol to the ether facilitates the absorption of the peroxide. The combination of the oxygen with the ether and some water, although it is very slight, is persistent, for the mixture has been sent to Australia without deterioration. The compound is, without doubt, a useful agent. I think I may claim it as an addition to our list of remedies likely to hold its place.

"I used it in the first instance for diffusion in the air of the sick-room, dispersing it in the form of spray. It is quick in action, and effective for purifying the air; it does not charge the air with moisture, and it does not irritate the breathing organs. The disadvantage of it is that it cannot be safely used near a light or fire. It should be sprayed through a glass tube.

"From this use of the ether I passed to administer it, also in form of spray, to ulcerated fetid or sloughing surfaces. I have applied it in this way to the throat with the best result, and in a case where there was fetid discharge from the nose.

"The ozonic ether may be administered by inhalation. If a fluid half-ounce be poured on a cambric handkerchief, and the vapor be inhaled, the taste of the peroxide is at once detected at the back of the throat when the inhaling process has been concluded, the ether while present obscuring the peroxide. The ether may be inhaled in cases of phthisis pulmonalis, especially when there is cavity of the lung. It soothes in these cases, destroys the fetor of the breath, and relieves the sense of suffocation. I am now administering the peroxide thus by inhalation in most phthisical cases, instead of by the mouth as I did formerly when I had only the solution in water to prescribe.

"The ether solution of the peroxide of hydrogen may be administered by the mouth in doses of from ten to thirty minims, or even a drachm. It may be prescribed with alcohol and water. Dr. Day, of Geelong, a very excellent observer, has prescribed it largely in diabetes. He commenced to prescribe an ether which had become ozonic by what may be called a process of natural change; but he finds the ethereal solution of the peroxide—as I have described it above—equally effective. Dr. Day's idea as to the mode of action of this remedy in diabetes is much the same as my own when I began first to administer the peroxide of hydrogen; but his results seem to be better than mine, and he is very strongly supported by many observers in this country and in Australia. It may be that the solution in ether possesses advantages which the solution in water does not, and the ultimate results of the inquiry will be most interesting. I have as yet no sufficient evidence of the value of the ethereal solution in diabetes to enable me to speak with authority.

"I can nevertheless speak well of the practice of administering the solution in ether by the mouth in other cases. It replaces the peroxide solution in water, and it goes excellently in combination with one common remedy—I mean cod-liver oil."

7. *Medicinal Value and Doses of Carbolic Acid*.—Dr. H. W. FULLER has tested in various cases at St. George's Hospital, the value of carbolic acid as a remedy in the treatment of diseases. As regards the dose, he found that some adults, especially men who had been spirit drinkers, could take ten or twelve

minims without inconvenience, and notwithstanding the occurrence of a certain degree of discomfort, could take doses of fifteen minims three or four times a day for many days consecutively; but that most persons, especially women, began to complain when the dose had been increased to eight or ten minims, and found six or seven minims a full dose.

The disagreeable symptoms produced by full or overfull doses were, firstly, a sense of burning in the throat on swallowing the draught; and, secondly, a giddiness and fulness, or peculiar feeling in the head—a feeling which occurred in some persons within two minutes after taking the acid, and in others not until the expiration of six or eight minutes. In some persons this giddiness passed off in ten or fifteen minutes, and in others lasted nearly an hour. In no instance was there any distinct headache or any interference with vision; but, when the giddiness was severe, there were in some instances cold clammy perspiration and feeble pulse.

The physiological action of the acid in various doses was noted in health and in different morbid conditions. In health, the only effect which was observed to follow moderate doses—four to six minims—was the production of a peculiar greenish tint in the urine, and the disappearance of all deposits of lithates. Both these phenomena were most marked when full doses—eight or ten minims—were given, and in themselves were very remarkable. The intensity of the greenish tint varied considerably. Apparently it was more influenced by the state of the urine than by the mere dose of the acid; but the disappearance of the lithates from the urine bore a tolerably constant ratio to the dose of the acid, so that, if the administration of four or five minims failed to produce the desired effect, the addition of three or four minims to each dose would, in most instances, accomplish it within three or four hours. Indeed, carbolic acid proves so powerful an agent in clearing the urine of lithates, that it will operate with tolerable certainty in cases in which moderate doses of alkalis fail altogether in checking the deposit. It does not increase or diminish the secretion of urine, nor does it appear to exercise any influence on its specific gravity; it does not affect the action of the bowels, though it diminishes the offensive odour of the motions; it has no effect on the temperature of the body, nor does it influence the pulse, except when it is given in excessive doses and excites giddiness and cold perspiration, and then the pulse is accelerated.

Having remarked the uniformity of the action of the acid in checking the deposit of lithates, and thinking that possibly it might control the formation of lithic acid, I administered it in full doses in several cases of gout. It certainly rendered the urine clear, but it did not appear to modify the gouty action or check its continuance. The same may be said of its action on rheumatism.

In dyspeptic cases—of the fermentative class—accompanied by the copious evolution of gas from the stomach and the discharge of fetid evacuations from the bowels, its effect is often most satisfactory. Administered in six or eight-minim doses it stimulates and is extremely grateful to the stomach; it causes an immediate evacuation of flatus, and, by checking fermentation, it puts an end to the evolution of gas, which forms the most distressing feature of many varieties of dyspepsia. With the exception of charcoal, I know of no remedy so useful in these cases, and it not unfrequently operates beneficially even when charcoal fails to relieve.

In typhoid or gastric fever, in which, *à priori*, beneficial results might have been expected from its employment, I have been unable to observe any controlling influence. The temperature keeps up, and the disease runs its course utterly unchecked by even full and repeated doses. In a case, James J., now under my care at St. George's Hospital, ten minims were taken every three hours for eighteen days, and throughout that time—from the sixth to the twenty-fourth day of the attack—the temperature ranged from 99 to 104—being 102 at the beginning, and fully 102 at the end of the time. In several other cases of typhoid fever, and also in cases of typhus, I have noted the same absence of controlling power.

In scarlatina, accompanied by sloughing throat, I have employed it on one occasion, and fancied that it proved beneficial. Having regard to the action of

the scarlatinal poison on the mucous membrane of the stomach, it is not unlikely to prove active for good, and certainly deserves a trial.

In the form of spray, I have used a solution varying in different cases from five to ten minims of the acid to an ounce of water for the purpose of inhalation. It has been employed in the early and advanced stage of phthisis—in so-called laryngeal phthisis, in chronic bronchitis, in gangrene of the lung, and in various affections of the throat, including diphtheria. In the last named, it does not prove so useful as the pure solution of permanganate of potash administered in the same way, which sometimes appears to exercise a magical effect in clearing the throat of the membrane; but in all the other forms of complaint it exercises in many instances a decidedly beneficial influence. It lessens the irritability of the mucous surface and facilitates expectoration, and the patients aver that it affords relief. In gangrene of the lung, it removes the fetid odour, and otherwise appears to be productive of good.

The only disagreeable symptom which I have observed to follow its employment in the form of spray, has been occasional faintness when the inhalation has been continued too long. The time at which this faintness occurs varies greatly in different cases, and I therefore instruct the patient to desist from inhaling as soon as the slightest discomfort arises. My impression, however, is, that this faintness is not induced by the action of the acid, but rather by the abnegation of atmospheric air which attends inhalation with Siegle's apparatus; for, in every instance except one in which I have observed it, Siegle's steam-apparatus was being employed. I therefore prefer using the common hand-bellows, previously heating the solution of acid if the inhalation of cold spray seem likely to be prejudicial.—*Brit. Med. Journ.*, Feb. 20, 1869.

8. *Mr. Lister's Carbolic Acid Lac Plaster.*—The following is the formula for its preparation: Take of shellac three parts, and crystallized carbolic acid one part. Heat the lac with about a third part of the carbolic acid over a slow fire till the lac is completely melted; then remove from the fire, add the remainder of the acid, and stir briskly till the ingredients are thoroughly mixed. Next strain through muslin, and pour into the machine for spreading plaster; and when the liquid has thickened by cooling to a degree ascertained by experience, spread to the thickness of about one-fiftieth of an inch. Afterwards brush the surface of the plaster lightly with a solution of gutta-percha in about thirty parts of bisulphide of carbon. When the sulphide has all evaporated the plaster may be piled in suitable length in a tin box.

For an antiseptic dressing that is intended to be changed from time to time, perfect absence of adhesiveness is a most valuable property; not only because it permits all discharge to escape beneath it into the porous material placed outside to absorb it, but because it avoids traction upon any deeper dressing or upon the skin during the process of withdrawing it, with the concomitant risk of regurgitation of air or liquid charged with living putrefactive organisms.

But for the permanent dressing in compound fracture this complete want of adhesiveness is the converse of what we desire. Here, the material employed, being designed to form part of the scab, should stick to the skin or to anything that lies beneath it. The lac prepared as above described may, however, be readily made suitable for this purpose, by rubbing off the film of gutta-percha by firm friction with a dry cloth, and then brushing the surface over with liquid carbolic acid. It then, at once, assumes a sufficient degree of adhesiveness.—*Brit. Med. Journ.*, Nov. 14, 1868.

9. *Some Phenomena of Anæsthesia by Protoxide of Nitrogen.*—Mr. F. W. BRAINE, in a paper on this subject (*British Medical Journal*, Jan. 23, 1869), observes: "It is curious to remark how often, as unconsciousness comes on, the ruling idea is one of noise and motion combined. Some patients think they are seated in, or running after, an omnibus; but many more imagine themselves in a railway carriage, travelling faster and faster, till they suddenly seem to enter a dark tunnel, and then all is a blank to them. Sensual emotions are not unfrequently excited in both sexes. A man, who had been married about three months, stated, on awakening, that he had been dreaming of his wife; and an



unmarried hysterical girl certainly gave evidence, by her movements, that she was quite aware of one of the duties of married life; and, moreover, in this case, the idea was still present when she was able to speak, for she addressed the administrator in terms far fonder than the occasion warranted; while another girl, who had behaved in a similar manner, said, 'I hope I have not said anything naughty.' Both of these cases brought forcibly to one's recollection, many trumped-up cases of felonious assault, and how extremely inadvisable it is to have recourse to anaesthesia without a third person being in the room.

"At a recent meeting of the Odontological Society, it was stated that the nitrous oxide had been administered in a few cases of pregnancy; but, delivery not having at that time taken place in any one of these cases, the condition of the fœtus *in utero* was unknown. A lady, one of the above cases, whom I put fully under the influence of the gas twice during the eighth month, has just been confined with a fine healthy boy; so that, in this case at least, the gas cannot have interfered with the nutrition of the child, for it weighed at birth eleven pounds and a half.

"When administered to a girl, aged nineteen, with cavities in the apices of both lungs, the patient was insensible at the end of forty-five seconds. The respiration suddenly became very shallow and panting, while, instead of the rosy hue which generally appears over the face and lips on the removal of the face-piece, the lips and face became more dusky before the red tint appeared; the pulse was not affected, but the respiration, for more than half an hour afterwards, was very shallow and hurried."

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10. *Mr. Higginbottom's Method of Using the Nitrate of Silver in Erysipellous Inflammation.*—MR. JOHN HIGGINBOTTOM complains that the correct directions either in regard to the strength of the solution of nitrate, or the proper method of applying it, is not given in the various medical and surgical works he has seen, and he therefore describes (*Practitioner*, January, 1869) the following as his method:—

"The affected part should be well washed with soap and water, then with water alone, to remove every particle of soap, as the soap would decompose the nitrate of silver; then to be wiped dry with a soft towel. *The concentrated solution of four scruples of the nitrate of silver to four drachms of distilled water is then to be applied two or three times on the inflamed surface and beyond it, on the healthy skin, to the extent of two or three inches.* The solution may be applied with a small piece of clean linen, attached to the end of a short stick; the linen to be renewed at every subsequent application. As the solution of nitrate of silver is colourless, it is necessary to pass a little linen, just moistened, over every part where it has been used, in order to be equally diffused, so that no part be left untouched.

"In about twelve hours it will be seen whether the solution has been well applied. If any inflamed part be unaffected, the solution must be immediately reapplied. Sometimes, even after the most decided application of the nitrate of silver, the inflammation may spread; but is then generally much less severe, and is eventually checked by repeated application. It is desirable to visit the patient every twelve hours, until the inflammation is subdued.

"By these means we have complete control over the disease.

"For the successful application of the nitrate of silver the ordinary brittle stick, either solid or in solution, must be used. Not the 'lunar caustic points perfectly tough,' nor the crystals and cake used for photographic purposes."

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11. *Convallarin and Convallamarin.*—DR. MARNÉE, of Göttingen, describes two glucosides, under the above names, which are obtained from the *Convallaria majalis*. 1. *Convallarin*, although nearly insoluble in water, acts as a purge without apparent inconvenience, in three or four grain doses, and even in larger quantities seems not to gripe at all. 2. *Convallamarin* is bitter and soluble in water; it causes some vomiting even when given in small doses. In larger quantities it is an energetic heart-poison; injection of 15 to 20 milligrammes ( $\frac{2}{6}$  to  $\frac{2}{6}$  grain) into the venous system of dogs produces paralysis of the heart, nearly always accompanied by clonic convulsions. The heart is quite unirritable, even if examined immediately. The respiration lasts longer than the heart's

action. Somewhat smaller doses slow the heart without lowering the arterial pressure, which latter *rises* remarkably during the second stage of heart-*quicken*ing. This stage of rapid and irregular action passes over finally into cardiac paralysis. Convallamarin seems to rank, both in qualitative and quantitative activity, with hellebore, upas antiar, digitalis, nerium, oleander, etc. As regards its action on the heart, it also resembles aconite and veratrum. Each of these glucosides forms a reddish-brown solution with concentrated sulphuric acid; addition of water changing its colour to violet. Concentrated hydrochloric acid dissolves each of them, forming a red solution between blood and wine tint. If the solutions are supersaturated with soda and filtered, the filtrates give the reaction of the glucose.—*The Practitioner*, Feb. 1869, from *Gravell's Notizen*, xi. 3.

12. *Spontaneous Changes in the Strength of Solutions prepared for Subcutaneous Injection*.—Some important observations have been made on this subject by Dr. BOURDON, of Paris. Having met with several cases in which subcutaneous injection failed to produce the anticipated effects, he was led to believe that this was due to a spontaneous loss of strength in such solutions as had been kept for several months. This change could be accounted for in only two ways—either by a decomposition of the alkaloid by the growth in the solution of vegetable organisms, which assimilate to themselves certain of the elements of the alkaloid, or by the deposition on organic formations of a portion of the dissolved salts of the alkaloid; the vegetable filaments, in the latter case, serving the same purpose as threads in favouring crystallization. In one of Dr. Bourdon's experiments, a solution of sulphate of quinia and tartaric acid in distilled water lost, in ten months, 25 per cent. of its saline and acid ingredients; a minute portion of the latter being, however, deposited in the form of crystals on the filaments of an abundant growth of mycelium that appeared in the fluid. It is, therefore, legitimate to assume that solutions of vegetable alkaloids are decomposed, with necessary loss of strength, by the production in the first place of vegetable organisms, which feed as it were on the dissolved substances, and after these organisms have obtained a certain development, by the deposition on them of an additional portion of the dissolved alkaloid salts.—*Ed. Med. Journ.*, Dec. 1868, from *Bull. Gén. de Thérap.*, 30 April, 1868.

13. *Charcoal Respirators*.—Dr. WM. MARCET extols (*British Medical Journal*, January 23, 1869) the use of charcoal respirators for sufferers from phthisis, from inflammatory affections of the lungs and air passages; and states they are a valuable means of protection of the lungs against the admission of impure and cold air, and the foreign particles of dust and mechanical impurities contained in it.

## MEDICAL PATHOLOGY AND THERAPEUTICS, AND PRACTICAL MEDICINE.

14. *Observations on the Physiology and Pathology of Hemi-Chorea*.—Dr. J. HUGHLINGS-JACKSON states (*Edinburgh Medical Journal*, Oct. 1868,) that it has long seemed to him that embolism of parts in the region of the corpus striatum gives a most satisfactory explanation of the physiology and pathology of cases of chorea.

There are three chief divisions of this hypothesis, which he illustrates by cases of hemi-chorea, although of course what follows, *mutatis mutandis*, will apply to cases of bilateral chorea.

1. That, in chorea, nerve-tissue forming the convolutions near to the corpus striatum, is in parts diseased.

2. That the nerve-tissue there diseased is *not* destroyed, but is unstable.

3. That this local instability is frequently brought about by under-nutrition

consequent on diminished supply of blood—*anæmia*, caused by blocking of small branches of the arteries supplying the convolutions referred to.

Dr. Hughlings-Jackson ranges under the following heads his arguments in support of his hypothesis: 1. The muscular *region* affected. 2. The *nature* of the movements produced. 3. The local *internal* change. 4. The *time* of the movements.

1. *The Muscular Region Affected.* It is the external muscular region affected, which points to the internal nervous organ, or part damaged. The following facts, supplied by cases of hemi-chorea, point most strongly towards the locality of the corpus striatum, which is the part damaged in the common form of hemiplegia.

(a). The movements are often one-sided; moreover, when chorea is bilateral, one side is usually *more* affected than the other. The quasi-accidental process of embolism is the very one likely to produce sometimes unilateral, sometimes bilateral, sometimes symptoms unequal on the two sides. Russell says: "Although the chorea may be ultimately bilateral, it *commences unilaterally* in a large majority of instances, and remains unilateral for a distinct, and sometimes a considerable period of time."

(b). The side affected is (as in hemiplegia from embolism) generally the right side.

(c). The muscles most moved in hemi-chorea are those most palsied in hemiplegia from destruction of part of the corpus striatum. In these so-called one-sided cases, however, the muscles acting bilaterally are involved, and they are *not* involved in hemiplegia. This is now, thanks to Dr. Broadbent's highly important hypothesis on unilateral and bilateral movements, not the difficulty that appears.<sup>1</sup> It is plain that the disease *must* be above the spinal cord when the face is involved. It is scarcely likely to be in the pons Varolii, as the face is always involved on the *same* side as the limbs.

(d). As in most cases, the leg suffers less than the arm.<sup>2</sup> This is the case, too, with hemi-spasm, although there are exceptional cases.<sup>3</sup>

(e). There is usually greater defect of speech when the right side is affected.<sup>4</sup> However, when the left side is apparently solely affected, speech is sometimes disordered. The reason is obvious.

(f). The movements sometimes die away into hemiplegia, quite like that which destruction of nerve-tissue in the corpus striatum produces, and in almost all cases there is *some* paralysis. Occasionally, but yet rarely, we find the paralysis almost as absolute in degree as that found in hemiplegia from clot.

The foregoing evidence points to the region of the corpus striatum.

2. *The Nature of the Movements.* The "disorderly movements" are not mere spasms and cramps, but incoherences of *movements of muscles*, and they are *successions of different* movements. Now, it is clear that close upon the corpus striatum lie the rudimentary arrangements of fibres and cells for the highly complex and widely associated movements of speech; and it is, independently of other arguments, at least plausible, that corresponding movements of the arms should have their "centres" here too.

3. *The Local Internal Change.*

(a). The general nature of the local changes. From the fact that we have never agreed as to its nature, is some evidence that the change in nervous tissue in chorea is a *minute* one. Although patients with chorea may complain of headache, they never, or certainly very rarely, suffer this intense pain in the head, or urgent vomiting, which occurs with *coarse* disease of the brain; and there are never any very great changes—usually none—in the optic disks. Great defect of sight (from optic neuritis) occurs not unfrequently with unilateral palsy, and with unilateral spasm, but *never* with unilateral chorea.

(b). The particular nature of the local change. It is admitted by all that we

<sup>1</sup> See Med.-Chir. Review, April, 1866; Ranking's Abstract, 1866, vol. xliii.

<sup>2</sup> See Russell, Med. Times and Gaz., May 30, 1868.

<sup>3</sup> See Med. Times and Gaz., Aug. 15, 1868, p. 178.

<sup>4</sup> See case reported by Dr. Hughlings-Jackson, Lancet, Nov. 26, 1864.

find in chorea, at least frequently, a *condition for* embolism. In some cases there is valvular murmur. In others there is a history of rheumatic or of scarlet fever. According to Kirkes, Wilks, and Andrew, vegetations are *invariably* found on the cardiac valves at post-mortem examinations of those who have died of chorea. Then chorea occurs with pregnancy and parturition—states under which it is admitted that *paralysis* from embolism results.

4. *The Time of the Movements.* Just as *loss of function*—for instance, palsy—follows *destruction of nerve-tissue, however produced*—by clot, by tumour, by injury, etc.—so *disorder of function*, for instance chorea or spasm, results from *instability of nerve-tissue, however produced*—by mechanically-produced anæmia, or by inflammatory changes in the imbedding tissues, and, also, as Dr. Hughlings-Jackson thinks, by embolism.

Wherever, in cases of chorea, the change may be, and whatever may be its *particular* nature, it is clear that its *abstract* nature must be one betwixt loss of function, leading to paralysis of motion, and healthy function allowing the orderly movements of health. In short, nerve-tissue in chorea is neither destroyed nor is it healthy—it is unstable.

When a sufficient quantity of *any* part of the corpus striatum is destroyed, the arm is permanently weakened or completely paralyzed. But it must not be overlooked that the limb is “partially paralyzed;” not paralyzed in some one or more parts only, although one part of the limb may suffer more than the rest. From this we may infer that the muscular system of the arm—the *whole* of the arm movements—is represented in *each* part of the corpus striatum; and thus is accounted for the fact that permanent loss of a small part of this motor centre may be borne without palsy, or that the palsy may be recovered from. In other words, the corpus striatum is a series of Physiological Units, each unit representing not some one *part of the limb*, but potentially the *whole* of the limb. (See author's papers on Localization of “Faculties,” *Med. Times and Gaz.*, Dec. 14 and 21, 1867; Aug. 15 and 22, 1868; *London Hospital Reports*, vol. ii. p. 238; and *Royal Lond. Ophth. Hosp. Rep.*, Dec. 1866.)

But although *destruction of a small part of the corpus striatum* need not produce any symptoms, or at least any permanent symptoms, it is plain that *instability of a small part must* result in symptoms; and it is equally plain that the whole of the arm *must* suffer when *any* considerable part of the corpus striatum is unstable.

Dr. Hughlings-Jackson admits that chorea often sets in after fright, but thinks that fright “produces” chorea most frequently in those who have the “condition for embolism.” A person will not, he thinks, have hemi-chorea unless the nutrition of convolutions near the corresponding corpus striatum is slightly below par; and he may even then never suffer from it unless there is some sudden extreme derangement of the whole arterial system (and fright is essentially this).

15. *Pathogenesis of Epilepsy.*—Dr. BROWN-SÉQUARD has communicated to the French Academy the results of new researches which he has made upon animals in order to study the effects of lesions of the spinal cord. Carrying further his well-known experiments of cutting one of the lateral columns of the spinal cord near the tenth dorsal vertebra, he has ascertained that epileptiform attacks may be induced in guinea-pigs, not only by this means, but also by the section of the cord higher up and nearer the bulb. He has also seen the attacks occur after a double section in the muscles innervated by the segment of the cord comprised between the two sections. Thus it would seem that the greater part of the cord takes an active part in the production of the convulsions. The brain seems to take no part in them. He has removed the brain, cerebellum, and pons from these epileptic guinea-pigs, maintaining life by artificial respiration. The epileptic attacks have continued, in spite of the removal of the encephalon. In the course of the discussion, M. Colin threw doubt upon the truly epileptic character of these attacks. Dr. Brown-Séquard said he had only once been able to produce epilepsy by unilateral division of the cord in any other animal than a guinea-pig; this was in a cat. The attacks produced in the guinea-pig were truly epileptic; and the epilepsy so produced was hereditarily

transmitted. M. Hardy said that clinical observation in the human subject showed that compression or injury of the brain, traumatic or by tumour, especially the posterior part, did produce epileptiform symptoms; while injuries of the spinal cord did not. There was a complete discordance between these clinical observations and the results of Dr. Brown-Séquard's experiments. Dr. Brown-Séquard said that, after analyzing hundreds of cases of cerebral lesion, he was convinced that diseases of the cerebral substance were incapable of producing epileptic symptoms; and that, when these occurred in the course of encephalic disease, he was disposed to attribute them to concomitant lesions of the meninges. M. Ricord confirmed the experience of M. Hardy.—*British Medical Journal*, February 6, 1869.

16. *Relations between Minute Emboli in the Gray Matter of the Brain and Delirium*.—At the meeting of the Pathological Society (Jan. 5), Dr. CHARLTON BASTIAN exhibited some microscopic specimens of minute emboli in the gray matter of the brain, as illustrative of the pathology of delirium. The specimens were taken from a strong man who fell and injured his head. Erysipelas set in, and he was brought to University College Hospital. He did not live long after admission. His head was much swollen, and there was much purulent lymph below the scalp, but there was none below the pericranium or calvarium. There was much congestion of the pia-mater, and the vessels of the brain were generally full. The lungs and kidneys were congested. Many of the small vessels of the brain contained masses of white corpuscles, some completely fused into a single mass, others tolerably distinct, but connected one with another, whilst in other masses there were signs of incipient degradation. The vessels of the kidney and liver were also blocked in the same way. In many cases of acute disease he had observed that the number of white corpuscles was increased, and that they apparently had a tendency to join together into masses, as well as to present more active amœboid movements than in health. The fusion of these corpuscles might give rise to embolism of the minute arteries of the brain in such acute diseases as pneumonia and rheumatism, where they were unusually abundant, and so produce the delirium so commonly observed. In leucocythemia the number of white blood-corpuscles was also greatly increased; but the disease was not an acute one, and the corpuscles did not present those irritative characteristics which caused them to cohere and change their shape. As similar accumulations were observed in the kidney, he thought these might also be the cause of temporary albuminuria.

The masses existed in all parts of the body, but were only infarcted in the small vessels. As to their existence during life, some of the masses presented complete fusion, some even incipient degeneration.—*Med. Times and Gaz.*, Jan. 23, 1869.

17. *Nitrate of Silver for Obstinate Headache*.—Dr. VIGNARD recommends nitrate of silver, in large doses, as an efficient treatment for obstinate headache. He describes the case of a female who had suffered under this painful affection for more than a month, and who had been unsuccessfully treated with opiates, but who recovered perfectly after a few doses of this remedy. He believes it to be most useful in anæmic cases. It was prescribed as follows: Nitrate of silver, one grain and a half; bread, *quant. suff.* Divide into six pills—one to be taken every hour.—*Ed. Med. Journ.*, Dec. 1868, from *Bull. Gén. de Thérap.*, 30 May, 1868.

18. *Two Cases of Tubercular Meningitis in the Adult, with rather Remarkable Absence of some of the Symptoms commonly regarded as Characteristic*.—These two cases under the care of Dr. Gairdner in the Royal Infirmary are reported by Mr. Jos. COATS (*Glasgow Medical Journal*, Feb. 1869) in great detail, and do not admit of abbreviation; we can therefore only give the remarks of Dr. Gairdner regarding them, which will be read with interest:—

“The occurrence of two cases of tubercular meningitis in the adult, admitted to hospital the very same day, and terminating at only two days' interval, was a sufficiently uncommon incident to give rise to remark; and had these cases

occurred during the winter session, it would have been my duty to make in a clinical lecture some of the observations now briefly submitted. The cases were very carefully recorded at the bed-side, and in both of them the diagnosis (with certain reservations) was made during life. The points of distinction between the symptoms present in the second case, and those proper to typhus fever, were specially noted in the report of 16th October. It was much more difficult to establish the exact diagnosis as between tubercular meningitis and other forms of possible cerebral or cerebro-spinal disease; and, attention having been given to this point, it may be regarded as certain that many of the most characteristic symptoms of tubercular meningitis, as observed in the so-called 'acute hydrocephalus' of the child, were entirely absent in these cases.<sup>1</sup> For example, there was no vomiting while under observation, nor (so far as could be ascertained) before admission; no strabismus, no ptosis, no marked irregularities in the rhythm of the pulse and respiration, no epileptiform convulsions (unless in a very indistinct form in the first case), no well-defined paralysis nor cutaneous hyperæsthesia. The abdomen was not remarkably retracted in either of these cases, as is so much insisted on in descriptions of the infantile disease. There was no grinding of the teeth, nor was there any very inordinate sensibility to light and sound. Neither was there any of that almost tetanic contraction and rigidity of the nucha, which is so striking a symptom of meningitis in children, as well as in some of the epidemic forms of cerebro-spinal meningitis. The pupils were not remarkably contracted or dilated in either of the cases now submitted, and it was particularly observed that they were not at any time either unequal or insensible to light. The fever was inconsiderable in the first case, and in the second was sufficiently accounted for by the state of the chest. Notwithstanding these anomalies as compared with what may be called the more *regular* forms of the disease in the child, it appeared to me probable in each case that tubercular meningitis would be found, because, 1st, the symptoms were not those of apoplexy, nor of epilepsy, nor of delirium tremens, nor of typhus or enteric fever, nor of embolism; 2d, cerebro-spinal meningitis apart from tubercle is rare, and in its epidemic form has scarcely, if at all, been observed in Glasgow; 3d, in both cases there had been a severe cough, with expectoration, while the pulmonary physical signs in the second case were such as to suggest tubercular disease, and accordingly the diagnosis was much more clearly defined in this case than in the other, in which the whole of the pulmonary symptoms had disappeared previously to admission.

"It may be worth while to add that in more than twenty years' hospital experience in Glasgow and Edinburgh, I have seen but few cases of tubercular meningitis in the adult; probably not more, if so many, as one per annum on an average. Many of these were sent into hospital (and this even by medical men) as being cases of fever. Dr. Russell, however, tells me that no such case has hitherto been observed in the City of Glasgow Fever Hospital within his four years' medical superintendence;<sup>2</sup> and also that no case of meningitis at all corresponding with the characters of the epidemic disease, described in Dublin and elsewhere, has been witnessed by him in his very extensive and special field of experience. A good many cases of sporadic cerebro-spinal meningitis have come under my own observation, from time to time, in Glasgow and Edinburgh; but having, in the summer of 1867, been fortunate enough to see several of the Dublin epidemic cases at that time under the care of my friends Dr. Banks and Dr. Lyons, in the Richmond Hospital, I am the more thoroughly persuaded that nothing resembling these has occurred within my personal experience in Glasgow. And as the present cases differ in some respects from the commonly received and typical descriptions of tubercular meningitis, it has

<sup>1</sup> It is very remarkable also that *almost every symptom specially recorded as characteristic of tubercular meningitis in the adult, with the exception of delirium and headache, was absent, or doubtfully present, in these cases.* See details and references in Reynolds' *System of Medicine*, vol. ii. pp. 385-86.

<sup>2</sup> Dr. Perry, on the other hand, has had several cases of simple or tubercular meningitis sent into the fever wards of the Glasgow Royal Infirmary, under medical certificates of fever.

appeared desirable, even at the risk of being a little tedious, to give the detail of symptoms almost unabridged, with a view to future reference and comparison. The peculiar character of the delirium, and the very remarkable state of the consciousness, together with the motor phenomena, and the strange variations from day to day, could only, indeed, be properly presented in a detailed report."

19. *Electricity in the Treatment of Certain Forms of Lameness in Children.*—In discussing the curative power of electricity in certain forms of lameness occurring during childhood, Dr. SALOMON (*Jahrb. f. Kinderheilk.*, 1868) refers to five cases of the so-called spinal paralysis of children, which had lasted from two months to several years; in all of which cases a difference was observed in the reaction evinced under the use of an electric current when applied by induction or continuously. When the induction current was employed, whether the excitation was extra or intra-muscular, not the slightest manifestation of contraction was to be observed. Under the influence of a strong current, the most prominent results were slight tremors of the muscular fibrillæ. On the contrary, when a continuous electric current was applied, muscular contraction took place, and this whether the continuity of the chain was allowed to remain unbroken, or was interrupted and renewed. Also when the chain is applied by a fixed *anode* near the origin of a nerve, while the zinc electrode is made to pass over the surface of the palsied muscle. The most energetic effect was produced when the zinc pole was applied to the spinal column, and the opposite pole was applied to the paralyzed muscle, or over its especial nerve. The contractions thus excited were less strong than those of the muscles of the corresponding sound limb, and were more slow and languid in their occurrence.

In two other cases observed by Dr. S., the etiology was very obscure. In another case, lameness of the muscles of the right extremity occurred suddenly upon the appearance of an eruption of measles. In this case, after the lameness had lasted for seven years, under the influence of the electric current by induction the lameness was benefited, but not entirely removed. Very nearly the same result was obtained under the use of the continued current.—*Centralblatt f. d. Med. Wissenschaften*, Nov. 1868. D. F. C.

20. *Chorea Treated by Succus Conii.*—Dr. JOHN HARLEY has recorded (*Practitioner*, Sept. 1868) a few cases of chorea successfully treated by large doses of succus conii, and one successfully treated by the same remedy is reported in the *Lancet*, March 6, 1869. The subject of it was a thin, pallid youth, æt. 17, who had the disease for six months. The involuntary movements were constant, universal, and very violent. He could not speak more than one word at once, and could not protrude his tongue. Chloroform, bromide of potassium, and other remedies having failed, Dr. WELCH ordered the patient, on Dec. 16, to take one drachm of the succus conii every six hours. The case had now become so serious that a fatal termination was feared. The one-drachm dose seemed to have little effect, and was doubled in two days' time, when some benefit appeared to result. On the 18th December a dose of three drachms was given, after which the patient complained of transient giddiness and slight impairment of vision. The same dose was repeated at intervals of six hours, with the most marked and rapid benefit. In two days the patient was comparatively well, and the sore over the scapula soon presented a good healing edge. The subsequent progress of the case was satisfactory.

21. *Natural History of Rheumatic Fever.*—Drs. WM. W. GULL and HENRY G. SUTTON read a paper with this title before the Royal Medical and Chirurgical Society (January 12, 1869) with the view of bringing under the notice of the profession a few more cases of rheumatic fever which have been treated by mint water, or, in other words, they say, which have been allowed to run their natural course. They moreover desired to point out what appears to be the natural course of rheumatic fever with reference to the heart, and to show in what proportion of cases the heart became involved when rheumatic fever was treated

by mint water. Lastly, to consider if there is any evidence to prove that the heart is more frequently involved when rheumatic fever is treated by mint water, or when treated by alkalies, by lemon-juice, or by blisters. This paper is based on twenty-five cases of rheumatic fever, twelve of which occurred in Guy's Hospital, most of them under the care of Dr. Gull, and thirteen occurred in the London Hospital, under the care of Dr. H. G. Sutton. The particulars of the twelve cases have been already recorded in the *Guy's Hospital Reports*, and the remaining thirteen cases are recorded in the present communication to the Society. Of these twenty-five cases, eighteen were females and seven were males. The average age of the patients was nineteen years. All the patients were suffering from their first attack of rheumatic fever, and the disease was well marked. The temperature of the body during the acute symptoms reached in some cases  $104^{\circ}$  and  $103^{\circ}$ ; in other patients it was  $101^{\circ}$  and  $102^{\circ}$ . Taking an average of all these cases, the temperature was about  $102^{\circ}$  during the acute stage. The average duration of the acute symptoms, as estimated by the thermometer and general symptoms, was ten days. Taking all the cases that have been recorded by the authors, the average duration was 9.1 days. The total duration of the acute symptoms from their commencement, including the time the patients were ill before coming into the hospital, to their cessation, was on an average seventeen days. The authors next proceed to inquire if the duration of rheumatic fever is longer when treated on the expectant plan, or when treated by drugs; and they consider that no one plan of treatment has any great advantage as regards shortening the duration of the disease. Drs. Gull and Sutton agree with Dr. Barclay in considering that we are not yet in a position to say that alkalies exercise any influence in curtailing the duration of the disease. They are also of the same opinion respecting lemon-juice. With regard to Dr. Herbert Davies' blister treatment, they remark it relieves very much the pain and sufferings of the patients in some cases; but it does not appear to curtail the rheumatic process. And the authors remark, "Our cases appear to us to teach that the rheumatic process runs its course under the expectant treatment as favourably as under the treatment by drugs." Drs. Gull and Sutton next proceed to inquire what evidence there is to show that the drug treatment prevents the heart becoming diseased, and they give a detailed account of the state of the heart in their twenty-five cases. Every one of these twenty-five patients was suffering from their first attack of rheumatic fever, and twelve of the number had organic disease of the heart when admitted into the hospital; two had some, but not very well marked evidence of organic disease of the heart when admitted; and in eleven there was no heart disease on admission. No organic disease of the heart supervened while under treatment, and the heart was healthy when these eleven patients left the hospital. They remark the experience gained in these cases of rheumatic fever, which were allowed to run their natural course uninfluenced by drugs, tends to prove that, if patients are admitted into the hospital suffering from a first attack of rheumatic fever, and the heart is not diseased on admission, it will very rarely become organically diseased while patients are under treatment. The opinions of Drs. Garrod, Dickinson, Herbert Davies, George Owen Rees, and Basham are then quoted to show that the heart did not, or very rarely did, become diseased when rheumatic fever was treated in the hospital by full doses of alkali, by blisters, by lemon-juice, or by nitrate of potash, and they observe: "It appears to us that there is not sufficient evidence to prove that any of the advocated systems of treatment have power to prevent the heart becoming diseased. In concluding that the treatment has prevented the heart becoming diseased, we have overlooked the fact that there might be no tendency at the time the patients were under treatment for the heart to become diseased, and our cases show that the good results which have been attributed to the influence of the remedies also occurred when no special remedies were used. Our cases, therefore, tend to teach that these good results were due, not to the drugs, but to the natural course of the disease." The authors then endeavour to show that when the heart becomes diseased in rheumatic fever, it does so at an early stage of the disease; and if it does not become diseased during the first week of the rheumatic fever, it rarely does so afterwards; and they give abstracts from twenty-two cases of rheumatic



fever to demonstrate this. Drs. Gull and Sutton's conclusions are as follows: That when the patient's heart was healthy on admission into the hospital, it was very rare for it to become organically diseased while the patients were under treatment by mint-water—or, in other words, when the rheumatic fever was allowed to run its natural course. That the evidence before the profession shows that the heart very rarely became diseased while patients were under treatment in the hospitals, and that this was the case when patients were treated by alkalies, lemon-juice, or by blisters to the joints. That there is not sufficient evidence before the profession to prove that any of the advocated remedies have power to prevent the heart becoming diseased. That in rheumatic fever the tendency is for the heart to become diseased during the first few days of the fever; and, should it escape the early days of the disease, there is each day a lessening tendency to its implication. Hence the cases would appear to show that, if at the end of the first week of the rheumatic fever the heart is free from disease, then there is little or no tendency for it to become diseased during the later weeks. That the reason why the heart did not become diseased when rheumatic fever was treated by alkalies, blisters, and by lemon-juice is to be attributed, not to the influence of the drugs, but to the natural course of the disease; for the patients did not come under treatment until the rheumatic fever had been going on some days, and until the period when the heart was most liable to become diseased had passed over. The authors conclude by saying: "Hitherto the investigation into the therapeutics of the rheumatic process has been rendered all but valueless by the deficiency in preliminary data. At present, therefore, as regards treatment, our cases seem to show that we are limited to a careful regimen of the patient. Rest, mechanical and physiological—rest in the very outset of the disease. We ought not to wait until the rheumatic process has become well developed in the joints. To regulate the temperature. To moderate excessive skin function by sponging the surface of the body. To allay pain, by placing the patient in an easy position, and sometimes by opiates. To sustain the organic nerve power by light diet, and occasionally by small doses of alcohol. To procure rest by the simplest means, especially avoiding such movements of the body as may excite the circulation. In fine, to place the patient in a physiological state of mean rest, if it may be so termed, of the nervous, the circulatory, the muscular, and digestive systems. To do this fully will often tax all our energies, and require often more consideration than is requisite for prescribing any supposed appropriate drug treatment. We are, therefore, at present, advocates of the exactest treatment of the patient under acute rheumatism, though we may doubt the value of so-called specific drugs."—*Med. Times and Gazette*, January 16, 1869.

22. *Alkaline Treatment of Rheumatic Fever*.—Dr. HENRY W. FULLER, in an interesting paper in a recent No. (March, 1869) of *The Practitioner*, discusses the objections which have been made to the alkaline treatment of rheumatic fever, and gives the result of his own experience in that mode of treatment, and points out the causes of its failure in the hands of some. He states that he does not mean by "the alkaline treatment," "the administration of salines or small doses of the carbonate of potash every four hours; for, in my experience these remedies so administered exercise absolutely no control, in either shortening the duration of the disease, mitigating the patient's sufferings, or protecting his heart from mischief. Neither do I mean the administration, throughout the attack, of large doses of the alkalies, such as a drachm and a half or two drachms every four hours, for these remedies, so administered, would depress the patient, and might even produce dangerous consequences. Moreover, experience leads me to believe that they certainly would not tend to his recovery. By 'the alkaline treatment,' I mean a plan of treatment in which alkalies play an important part, but which consists not only in the administration of alkalies, but in the careful regulation of the secretions, the strictest attention to diet, and the administration of tonics, such as quinia and bark, as soon as the patient can bear them. Being convinced that as soon as the system is alkalinized, as shown by the alkalinity of the secretions, a great safeguard is obtained against inflammation of the heart, or of any of the then unaffected joints, my practice

is to give not less than an ounce and a half of the alkaline carbonates, either alone or in combination with a vegetable acid, during the first twenty-four hours of treatment. They should be given largely diluted with water, either in effervescence or otherwise, as is the most grateful to the patient. Sometimes the whole quantity of the alkali is ordered to be mixed with three imperial pints of water, and taken as a drink in the twenty-four hours—a form which is often very grateful to the patient—but more commonly two drachms are ordered to be taken in effervescence every three or four hours in combination with an ounce of lemon-juice, or with half a drachm of citric acid dissolved in four ounces of water. At the same time, if the bowels are torpid, ten grains of colocynth and calomel pill are prescribed at bed-time. As soon as the urine, when freshly voided, ceases to show an acid reaction—which is usually the case after twenty-four hours—the quantity of the alkali is diminished by one-half, six drachms only being administered during the succeeding twenty-four hours. At the expiration of that time, if the urine remains alkaline, three drachms only are given in the next twenty-four hours; and on the fourth day, if the urine still shows an alkaline reaction, the form of the medicine is altogether changed. The treatment ceases to be essentially alkaline: either a cinchona draught is ordered to be taken three times a day, containing a scruple or half a drachm of bicarbonate of potash—a little more or a little less, according to the condition of the urine, which should be kept nearly neutral—or three grains of quinia dissolved in lemon-juice is given three times a day in effervescence, with half a drachm of bicarbonate of potash or soda. Throughout the attack an aperient pill is given whenever it is needed, and opium is rarely, very rarely administered—never except under conditions of extreme nervous irritation. The diet is restricted to beef-tea or broth, with soda-water and milk and barley-water as a drink, as the smallest quantity of solid food, given a day before the tongue has thoroughly cleaned, is apt to induce a recrudescence of the disease. Wine and spirits are strictly forbidden, though experience has convinced me that wine and spirits prove less hurtful than the smallest quantity of solid food. If the patient is chilly, he is ordered to lie between the blankets; but, otherwise, he is allowed to lie between the sheets, and is kept tolerably cool. The heaping of extra blankets on the bed is strictly prohibited, as they tend to keep up excessive perspiration, and thus, by producing exhaustion, retard the patient's recovery.

"The merits which I claim for this plan of treatment, which I have carried out both in hospital and private practice for twenty years, are: 1. That it affords very speedy relief to the patient's sufferings—relief far exceeding that produced by any opiate. 2. That it checks the rheumatic action, mitigates the severity of the disease, and promotes the speedy recovery of the patient. 3. That it protects the heart from mischief, and thus obviates one of the most distressing maladies to which flesh is heir.

"In proof of these statements, I would adduce the following facts: 1. The patients very commonly doze, without the aid of opiates, within twenty-four hours after the first administration of the remedies, and almost invariably sleep tolerably soundly for an hour at a time within forty-eight hours after the commencement of treatment, showing how great is the relief afforded. Coincidentally with the repose thus obtained, the temperature of the body falls—usually to the extent of two or three degrees within forty-eight hours, and not unfrequently to its natural standard within three or four days—the frequency of the pulse decreases by ten or fifteen beats, the quantity of the urine is largely augmented, and the pain in the joints is greatly lessened.

2. In many instances, within a week, and almost invariably within ten days from the commencement of treatment, the patient—who on admission was in agony of pain with swollen joints, incapable of moving, and bathed in the profuse acid perspiration of rheumatic fever—becomes cool and free from pain, and anxious to leave his bed. In ninety-four consecutive cases, which were tabulated with a view to this inquiry, the average duration of the disorder after the commencement of treatment was only eleven days—in other words, the patient not only reported himself free from pain, but *was up and dressed* at the expiration of eleven days. The hospital register of my cases tells a very

similar tale, though the figures are necessarily somewhat different. Taking 116 consecutive cases of rheumatic fever which were admitted under my care into St. George's Hospital, between January 1, 1860, and December 30, 1865, and excluding twenty-eight in which pericarditis existed at the time of the patient's admission, the average term during which the patients remained in hospital was only 20.1 days; and as the patients are always kept in hospital for a week or ten days after the pains have ceased in order to guard against a relapse, the average duration of the disease under treatment was only eleven or twelve days. These figures include all cases attended with endocardial murmur. Even including the twenty-eight cases of pericarditis, the average stay in hospital was only 22.2 days; a result, I believe, which has never been attained under any other plan of treatment.

"3. I have submitted 439 cases of rheumatic fever to the alkaline treatment in hospital and private practice: the disease has not proved fatal in a single instance; in nine cases only, or in little more than 2 per cent., has any cardiac complication occurred while the patient was under my care, and in six of these the murmur was discovered within twenty-four hours after the commencement of treatment, and, therefore, before the remedies can have taken effect; nay, it may even have existed in an incipient state, though it escaped detection when the patient was first seen. Dr. Dickinson's statistics are almost more striking, because they exhibit the contrast between the effects of the alkaline treatment when properly carried out, and all other varieties of treatment, including alkalies in inadequate doses. While he was Medical Registrar at St. George's Hospital, he carefully noted all the cases of rheumatic fever admitted under the physicians, and during the space of five years there were admitted 161 patients whose hearts were sound at the date of admission. One hundred and thirteen of these cases were submitted to treatment other than alkaline, and in thirty-five of these, or in 30.8 per cent., the heart became involved; whereas the heart remained free from mischief in forty-seven out of the forty-eight cases which were submitted to the alkaline treatment—in other words, the heart was affected with little more than 2 per cent. [Vide *The Lancet* for Jan. and Feb. 1869.]

"Thus, then, it is obvious from statistics on a large scale, carefully collected by independent observers in the wards of St. George's Hospital, that 'the alkaline treatment,' when properly carried out, not only affords speedy relief to the patient's suffering, but almost insures immunity from disease of the heart. It only remains for me to point out the causes which have led to the failure of this treatment in the hands of certain practitioners. In so doing, I give the result of clinical experience, both in hospital and private practice.

"The first, and most common cause of failure, is the administration of insufficient doses of the alkalies in the early period of the attack—of doses which, though they would be regarded as large under ordinary circumstances, are practically useless for the arrest of rheumatic fever. An ounce and a half is the minimum dose of an alkaline carbonate, which will suffice to overcome the acid condition of the system during the first twenty-four or forty-eight hours of treatment, and in sthenic cases two ounces are often needed. Four or five drachms, which form the maximum dose, administered daily by many persons who imagine that they are using alkalies efficiently, are simply useless. They neither mitigate the pain nor shorten its duration, nor do they protect the heart from mischief.

"The second cause of failure is mistaken diagnosis, and the consequent administration of alkalies in cases in which they do not exercise a curative influence. It constantly occurs to me to see persons, who have been drenched for a week or ten days with alkalies, under the impression that they were afflicted with acute rheumatism, who, on investigation prove to be suffering from acute osteo-arthritis, or so-called rheumatic gout from gonorrhœal rheumatism, or from atonic gout—disorders which, though resembling rheumatic fever in many of their features, are yet totally distinct from it in their essential character, and require an entirely different plan of treatment. Indeed, in most of these cases, full doses of the alkalies prove absolutely noxious; they depress the patient, and fail altogether to relieve his symptoms.

"The third cause of failure is an improper alimentation. The diet should be

restricted to broth, beef-tea, or other liquids; all solid food being strictly prohibited; but, in many instances, I find that little heed is paid to this matter, and that throughout the attack the patient is permitted to take whatever nourishment his appetite will enable him to swallow. Yet there is nothing of which experience has more fully convinced me than that the strictest dietary is of the utmost importance—of infinitely greater importance than in gout—and that the taking of solid food, such as fish or meat, however small the quantity, will serve to keep up imperfect assimilation, and not only counteract the effects of remedies, but almost indefinitely protract the disease. The desire for solid food returns long before the power to digest it, and so it happens that a piece of meat taken a day before the tongue has cleaned, and the stomach is in a condition to digest it, proves not unfrequently the cause of a relapse.

“These, then, are the principal causes of the failure of the alkaline treatment in the hands of certain practitioners. But there are several minor causes of failure, which serve to swell the chorus of those who maintain that alkalies are of no real service. Thus, I frequently find that no heed is paid to the state of the secretions, and that although the liver is sluggish, and the bowels disordered, no steps are taken to rectify the derangement; or the alkalies are pushed beyond the exigencies of the case, so that intense alkalescence of the urine is kept up at a time when the patient ought to have been taking bark or quinia—a mistake which leads to great depression of the system; or, lastly, the alkalies are perseveringly pushed in the exceptional cases in which they produce diarrhoea and run off by the bowels—cases in which no alkaline action can be induced, and in which some other treatment ought to be resorted to.”

23. *Treatment of Scarlet Fever.*—Dr. CHARLES T. THOMPSON gives (*Lancet*, Feb. 27, 1869) the following as his mode of treating scarlatina, which he claims to be not only highly successful in effecting a cure, but also destroying its contagiousness:—

“On the first access of the fever, I put my patient into a warm bath, and repeat this as often as the strength of the patient will allow or the severity of the attack may require. The first effect of this treatment is to produce a soothing and refreshing feeling in the patient, to be followed soon by such an eruption on the surface, of so vivid a colour and in such amount, as would astonish those who have never witnessed it. Thus one of the greatest dangers of this fearful disease—the suppression of the eruption—is escaped.

“After the first or second bath the appetite usually returns, so by getting down light and nutritious food the means are afforded of supporting the strength of the patient during one of the most trying periods of the disease. By this treatment the excreta from the skin are removed as rapidly as they are deposited, doing away immediately with the source of infection, leaving no room for the dissemination of the disease. The desquamation of the cuticle is greatly promoted, it being removed in small particles, and never in large pieces.

“The drying of the body after the bath is effected by soft linen cloths, sufficiently large to envelop the whole person, and with as little friction as possible; in fact, the surface is what may be called “dabbed” dry, as the excitement from friction of the skin often produces great mischief.

“The irritation of internal organs is also at once relieved by this continued determination to the surface. And as the condition of the latter becomes more healthy, the nasal, renal, and alvine secretions, with those of the throat—in my opinion the most dangerous of all—are speedily deprived of their noxious properties, and quickly recover a healthy character, thus again removing additional sources of infection.

“The fever rapidly subsides, and convalescence usually proceeds more or less quickly, according to the mildness or severity of the attack. Another advantage of this treatment is, that a very serious case is soon reduced to a mild one, and the patient recovers in less than half the usual time.

“This practice I have pursued for more than fifteen years, during which period I have attended many cases of scarlet fever; but have never lost a single patient from this disease, nor can I call to mind at this moment any one case in which the infection has been carried from the patient to any other individual. I have

had six or seven cases in a family at about one and the same time, the infection clearly traceable to schools, &c.; yet have never known the disease spread to any others in the same household. I have also attended cases where isolation was impossible, or would not be attended to, the patients having free communication with other members of the family, but where the treatment above recommended has been scrupulously carried out, no second case has arisen.

"The consequence of all this is that, when the patient's health is sufficiently re-established, permission has been given to join the rest of the family; and I am satisfied that the patient might also speedily be restored to society with perfect safety. In no instance have I known any harm to arise from this permission. During the convalescence of the patient the bath, of course, may be used daily, or every other day, according to the feelings or wish of the patient; but its temperature should be gradually reduced, so as to invigorate and not exhaust, and also to enable the surface successfully to resist the alternations of heat and cold to which the patient may be exposed in moving about from place to place.

"The terrible sequelæ of this formidable disease are, also, by the treatment above recommended, seldom, if ever, met with. No nurse or washerwoman has, to my knowledge, suffered from the performance of her avocations. Of course the necessary medicines must be administered as occasion requires."

24. *Treatment of Valvular Diseases of the Left Side of the Heart by Inhalation*.—Dr. C. GERHARDT believes that he has arrived at valuable results by experimentation on inhalation of chemical solutions in the treatment of valvular diseases. He employs an aqueous solution of bicarbonate of soda,  $\frac{1}{2}$  to  $1\frac{1}{2}$  per cent. in strength; the patient inhales this for a quarter of an hour at a time, three or four times daily. He has tried this plan with fifteen patients; seven of these were the subjects of old heart disease; in one of them no improvement whatever was effected, the malady running on without a check to a fatal issue. Another was only temporarily improved; the remaining five were notably improved, and left the hospital with a distinctly altered condition of the diseased valves; one of these had been a very bad case, an old man, who was œdematous, and suffered from severe orthopnea. The remaining eight cases were of recent endocarditis; in three of these Gerhardt believes that the medicine obtained a direct and complete cure. In three others there was great improvement. The remaining two were cases of mitral disease, in which the subjective symptoms were alleviated. Gerhardt thought the results of the treatment so favourable as to warrant experiments with other inhaled remedies—viz., nitrate of potash, and chloride of iron; but the result of a few trials did not encourage him to proceed.—*The Practitioner*, Feb. 1869, from *Deutsches Archiv. f. klin. Medicin.*, xv. 2.

25. *Diphtheria*.—Dr. W. ROSER lays down the following as the general conclusions deducible from the most recent investigations into the pathology of diphtheria. 1. Diphtheria is not confined to mucous surfaces, but may appear also on the surface of wounds. A wounded individual, when brought in contact with a patient suffering under an attack of diphtheria of the throat, is liable to have his wounds become covered with a diphtheritic effusion. 2. The diphtheria of wounds and hospital gangrene are not identical. The similarity of the two diseases, it is true, renders the diagnosis very difficult. The diphtheritic appearance of a wound may result from very different causes. 3. True diphtheria of a wound may be followed by paralysis, but not so hospital gangrene. 4. There is an hospital croupal angina (*angina nosocomialis*). Hence hospital gangrene presents this further analogy with diphtheria, that it may be attended with a peculiar form of diphtheritic angina. 5. Besides the laryngeal diphtheria, denominated croup, there is, also, simple diphtheritic angina as well as a pyæmic, scarlatinose, typhus, variolous, etc. diphtheritic angina. 6. There is a diphtheria of the gums, and of the mucous lining of the mouth. This form of diphtheria is not to be confounded with epidemic stomatitis, as has been done by Bretonneau. 7. Cases of diphtheritis of the mucous coat of the urinary bladder, but especially those attended with a discharge of ammoniacal urine, are to be viewed as the result of a specific infection from hospital gangrene. 8. What

has been denominated diphtheritis of the large intestine, includes different specific morbid processes; thus there is a dysenteric, hospital, typhous diphtheria, and perhaps, also, several forms of toxic diphtheritis of the large intestine. 9. What have been described as diphtheritic affections of the vagina include cases of genuine diphtheritis, hospital gangrene, as also cases of pyæmic, blennorrhagic, and syphilitic inflammations of the part. 10. The mucous coat of the eye may be the seat of true diphtheria, but from many causes the eye is also liable to an inflammation attended with fibrinous exudation and infiltration simulating diphtheria. 11. It would appear to be necessary to admit the occurrence of a septic or cachectic diphtheritis. 12. The cases of what has been termed secondary diphtheritis are, in most cases, of a different nature. Some, it is true, are really diphtheritic, occurring in a diseased person, or one convalescent from disease; while it is very certain that others are the result of pyæmia. It is probable that the cause of many of these so-called chronic cases must be sought for in a septic or ammoniacal cachexy.—*Archiv d. Heilkunde, Leipzig*, Jan. 1869. D. F. C.

26. *Diabetes Mellitus successfully treated by Opium without Restriction of Diet.*—Mr. PAVY reported to the Clinical Society of London the following two cases of this:—

A female, æt. 68, was admitted under his care into Guy's Hospital, on May 26th. 1868. Her complaint had been recognized two years, and at one time she had been passing an exceedingly large quantity of urine, and had been gradually losing flesh and strength. Upon admission into the hospital, the quantity of urine was about five pints a day, and was highly charged with sugar. She was placed upon the ordinary middle diet of the hospital, which included bread, potatoes, and beer. She was also ordered four ounces of brandy, and two bottles of soda-water daily. This diet was continued as long as she remained in the hospital. Upon the day of admission, a draught was ordered, consisting of ten grains of bicarbonate of potash, half a drachm of aromatic spirit of ammonia, and an ounce of infusion of calumba; to be taken three times a day. This draught was, by misunderstanding, continued throughout the patient's stay in hospital. Opium was given in the form of a pill, three times a day, and the dose was gradually increased. A daily examination of the urine was made; and the results were copied into tables. At first, the quantity of urine was 100 ounces, the specific gravity 1040, the quantity of sugar per ounce thirty-two and three-quarters grains, and the quantity of sugar for the twenty-four hours, 3275 grains. The first effect of the opium was to diminish notably the amount of urine. The degree of saturation with sugar remained for a time about the same, but through the fall in the amount of urine, the quantity of sugar for the twenty-four hours was diminished. Within three weeks, the quantity of opium administered was raised to ten and a half grains daily. It was then suddenly discontinued on account of a greater degree of drowsiness than was desirable being produced; but, in a few days, was recommenced, and this time, being more gradually increased, was borne without producing any disturbance. On July 28, the quantity of urine was twenty-five ounces daily, the specific gravity 1027, and no sugar was passed. On the three subsequent days there was a little sugar, but it afterwards disappeared, and remained absent as long as she continued in the hospital, viz., until October 28th. When the sugar disappeared, the patient was taking nine grains of opium daily. It was afterwards further increased to twelve grains, and then gradually diminished until October 17th, when all was taken off, the patient during the remaining time taking no medicine, and passing no sugar. The last daily record was forty ounces of urine in the twenty-four hours; specific gravity, 1025; and no sugar. With the improvement in the state of the urine there was a corresponding improvement in the health and strength of the patient, who ultimately expressed herself as feeling perfectly well in every respect. Upon being discharged, she lived precisely as she was in the habit of doing before she became affected, and had come to the hospital several times; the urine being, on each occasion, found devoid of sugar. Dr. Pavy brought to the Society some urine passed on that day, which, upon being tested with the cupro-potassic solution, was seen to be

free from sugar. Dr. Pavy had given opium and morphia in other cases; and the results strikingly exemplified the controlling influence of the drug over the disease. One was a middle-aged man, who was suffering from a severe form of the complaint. By restriction in diet, the quantity of sugar had been reduced to about 1200 and 1500 grains a day. Opium was then administered alone, in gradually increasing doses up to eighteen grains daily, when the urine was found to have become devoid of sugar. The opium was then suddenly discontinued, and an ounce of camphor mixture given three times a day. The urine, when the opium was discontinued, amounted to thirty ounces daily: its specific gravity was 1025; and it contained no sugar. On the following day it contained a trace of sugar; the third day, 140 grains were passed; the fourth day, 120 grains; the fifth day, 340 grains; the sixth day, 800 grains; the seventh day, 402 grains; the eighth day, 1060 grains; the ninth day, 680 grains; the tenth day, 612 grains; the eleventh day, 720 grains; the twelfth day, 1712 grains; the thirteenth day, 1162 grains; and the fourteenth day, 1440 grains—when the quantity of urine amounted to sixty ounces for the twenty-four hours, and its specific gravity was 1038. The opium was now resumed, and the daily dose increased, until, as before, it amounted to eighteen grains. The urine was now reduced in quantity to thirty-five ounces per diem; its specific gravity was 1033, and the sugar passed amounted to 368 grains. On the following day, the urine was forty ounces in quantity, and the amount of sugar passed 250 grains. On the third day, quantity of urine thirty-five ounces, with only a trace of sugar present. On the fourth day, quantity of urine forty ounces; specific gravity 1021, and no sugar. After the period mentioned, a little sugar was again passed, and it was found that the patient was not adhering strictly to the diet that had been ordered. Dr. Pavy had seen him since his discharge from the hospital. On returning home, he discontinued all medicine, and paid no attention to diet, and, as was to be anticipated, his urine was again charged with sugar.—The other case was that of a patient who was passing, upon a mixed diet, from eight to ten pints of urine a day, containing about 8000 and 9000 grains of sugar. By a restricted diet and an alkaline mixture, the urine was reduced to four and five pints daily, and the sugar to about 1500 grains. The mixture was discontinued, and hydrochlorate of morphia given, at first in half-grain doses three times a day. The dose was increased, until in about two months nine grains were given daily. The urine fluctuated now between three and four pints a day; and the specific gravity had descended from 1028 and 1030 to 1018 and 1020. The urine also had become devoid of sugar. M'Gregor, as far back as 1837, had published in the *London Medical Gazette*, a record of two cases in which opium had been given in large doses, with the effect of producing for a time a marked palliation of the disease. M'Gregor, in one of his cases, had increased the quantity of opium until it reached ninety grains daily. By modern practitioners, opium had also been generally looked upon as exerting a favourable influence in the disease; but he was not aware that direct evidence of its controlling influence such as was supplied by his communication had been previously placed upon record. There was still, he thought, much to be learnt about its extent of power in different cases. The belief was, from the case which formed the basis of his communication, and other experience that he had had, that it would be found sufficient in many instances, amongst elderly subjects, where the disease was observed to assume its mildest form, to check by itself the elimination of sugar. In young and middle-aged subjects, however, where the disease, as a rule, assumed a much more severe character, his experience was that, to obtain a similar effect, the restricted diet must be conjoined.—*Brit. Med. Journal*, Jan. 9, 1869.

27. *Cure of Albuminuria by Iodide of Calcium.*—A number of cases of albuminuria in which the potassium salt failed, and the calcium salt gave good results, are put on record by M. BAUDON. We cannot give the details of these cases, but may briefly refer to one or two of them. One of them, that of a woman aged 36, with albuminous urine, and other characteristic symptoms, was first put on the iodide of potassium in the ordinary doses, with quinia-wine and good animal diet. This produced very unsatisfactory results. The iodide of

calcium was then tried. At first it was given in doses of 40 centigrammes (about gr. vj) a day, in three doses, taken in half a glass of fresh water. In the course of a fortnight the dose was increased to  $1\frac{1}{2}$  grammes (gr. xxv) in the twenty-four hours. Ultimately the progress under this treatment was so satisfactory that the dose was increased to 3 grammes a day in combination with iodide of iron and quinia-wine. At the end of thirty-nine days' treatment, in the course of which the dose of the calcium salt was raised to 4 grammes a day, the patient had completely recovered. M. Baudon regards this as a crucial experiment. But in the presence of our knowledge of the advantage of quinia and iron in certain hamaturias, it may be asked to what was the result due, the iron and quinia, or the iodide of calcium?—*The Practitioner*, Feb. 1869, from *Bull. Gén. de Thérap.*, Nov. 1868.

28. *Etiological Relationship of Bright's Disease of the Kidneys and Scarlet Fever*.—Dr. STREISER examines this question in the *Jahrb. f. Kinderheilk.*, 1868. He rejects entirely, as without foundation, the doctrine which teaches that the *nephritis scarlatinosa* is either an accidental complication or a sequel of scarlet fever; but in like manner as the angina, so common a symptom of the disease, is produced by the same morbid cause to which is due the eruption on the surface; that is, a localization of the same pathological process upon the kidneys—in the one case, as upon the throat and skin in the others. Post-mortem examination and testing of the urine, from an early period in the disease, show that the kidneys suffer from the commencement of the attack, and not merely from the period of desquamation. The nephritic affection is usually of a purely catarrhal character, and occasionally of so mild a grade as not to be detected during the lifetime of the patient. On dissection after death, however, its existence is shown by the swollen condition of the epithelium of the tubuli uriniferi. When, besides the presence of albumen in the urine, we find cylindrical casts and blood, the nephritis has assumed the croupose form. According to Dr. S. this is the result of a purely mechanical cause, the accumulation of epithelial debris, namely, in the tubuli of the kidneys. There results from this a stasis of blood in the parenchyma of the kidneys, and finally effusion. The influence of cold experienced by the scarlatinous patient during the period of desquamation, in the production of nephritis, Dr. S. believes to be much overrated. The croupose form of nephritis often sets in, as such, very suddenly, and may proceed attended by abnormal urination without the slightest indication of dropsical effusion; while, on the other hand, anasarcaous swelling may be present without any disease of the kidneys. Nothnagel has observed many such cases.—*Centralblatt f. d. Medicin. Wissenschaften*, Nov. 1868. D. F. C.

29. *Tonics in Dropsy*.—Mr. E. GAYLOR observes (*Brit. Med. Journal*, Feb. 27, 1869): "The two forms of dropsy most likely to be benefited by iron are, first that effusion which is produced by a watery state of the blood; and secondly, that form of dropsy due to the impregnation of the blood with some noxious material. In a poisoned condition of the blood there is a stagnation in the capillaries, thereby causing an impediment in the capillary circulation. Mr. Power believes that the presence of urea in the blood interferes with the development of new blood-corpuscles, as well as spoiling those already formed.

"These two forms of dropsy being marked by decay and deterioration, the proper remedies would be those which would help to form blood, assisted by nutrition, warmth, rest, etc. Dr. Basham, in his Croonian Lectures, 1864, says that iron is *not* the most efficacious in the form of the sesquichloride (the old tinctura ferri sesquichloridi), but as an ammonio-chloride, which he directs to be prepared as follows: 'The ordinary dose of the sesquichloride is to be added to a drachm of the liquor ammoniæ acetatis, this being previously acidulated by a few drops of acetic acid.' The sesquichloride must not be added to the neutral liquor, as an *insoluble* ammonio-chloride falls, which it is very difficult to take up again. If the saline be first acidulated, a very nice looking mixture is formed, which will keep good for any length of time.

"This remedy seems to have the power of promoting the reproduction of cells, while it restores the powers of the organism. It is the nucleated cell which is



involved in the disease; and it is also the nucleated cell which is the vital source of secretion and development. If a fair trial be given to this form of preparation, I venture to predict that it will be found one of the most valuable of the preparations of iron, and the best hæmatic in the whole range of therapeutics.

"Since reading Dr. Basham's Lectures, I have used this form of the remedy with the best results."

30. *Sequelæ of Cholera*.—Dr. L. GUTERBOCK remarks, in the *Berliner Klin. Wochenschr.*, 1868, No. 16, that as in typhus and scarlet fever, the occurrence of parotitis is frequently observed after cholera—not to the same extent, however, in all epidemics—in some even there being an entire absence of the throat affection. In 1852, among 61 cholera patients, no parotitis was observed; in 1866 there occurred 10 cases among 757 cases of cholera. Of these 10 cases of parotitis, 4 were very severe; 2 of middle severity; and 4 were slight. One patient had typhus fever, with eruption, and pneumonia combined; a female had an exanthem and diphtheritis vaginæ; another the latter only. A man experienced, after an attack of cholera, a paralysis of the bladder at the appearance of the parotitis. The latter always occurred suddenly, without any premonition, between the fifth and seventh days of the disease, with considerable increase of temperature, and ran a rapid course, suppurating within four to five days. The matter discharged itself generally by the external cavity of the ear; but, in two cases, by the cavity of the throat. In three cases the glands on both sides of the neck were affected. The parotitis, according to Dr. G., commences with a catarrh of the glandular duct. A yellowish fluid, composed of pus and epithelial scales, may be squeezed out of the duct of Steno. and its presence there may be detected upon dissection after death. Four of the cases terminated fatally; six favourably; in one of these the inflammation was discussed. The treatment of the parotitis consisted chiefly in local bloodletting in the commencement, with the local application of tincture of iodine and warmth. Later, when resorption does not occur, poultices were applied to the diseased gland. When suppuration occurs, incision with the knife; internally, the mineral acids and a strengthening diet. In one case inflammation of the submaxillary gland and of the cervical glands of the opposite side occurred, and followed the same course as the parotitis to a favourable termination.

Another sequela of cholera consisted in a tetanic contraction of the flexors of the extremities; as such Dr. G. interprets the cases reported by J. Meyer, as those of paralysis of the extensors (*Charité Ann.*, 1856, vii. 1). Dr. G. has himself observed six cases of these contractions, of which five were in females between 22 and 29 years old; one in a boy 9 years old. In four of the cases there was also an exanthem; in one diphtheritis vaginæ. During convalescence from the tenth to the fifteenth day the patient would complain of the sudden occurrence of a tearing, rending pain in the hands and forearms, as well as in the feet and legs, followed by tonic contraction of the flexores carpi radialis and ulnaris, and of the palmaris longus; in some the flexores digitorum sublim. and profund., but especially the opponens and adductor pollicis, opponens digit quinti, and the muscoli interossei volares. Convulsive movements of the fibrillæ of the contracted muscles were observable. In four of the patients the muscles of the leg were similarly affected. There was no diminution of sensibility. The duration of the tonic spasms was generally from twenty-four to forty-eight hours, but sometimes they continued for some days. A complete cure occurred in all cases.—*Centralblatt f. d. Medicin. Wissenschaften*, May, 1861. D. F. C.

31. *Beneficial Effects of Injection of Chlorate of Potash in Treatment of Dysentery after Failure of Opium*.—It is stated in the *Bericht. d. Krankenanstalt, Rudolph Stiftung*, 1867, that LÖBEL treated, for three entire days, a dysenteric patient, 23 years old, with preparations of opium, by the mouth and in the form of enemata, but without any beneficial result. The discharges still continued of a decidedly bloody, dysenteric character. On the fourth day of the disease, he gave injections consisting of chlorate of potash ℞j to two ounces of warm water. The discharges, though still thin, lost immediately their bloody aspect, and assumed a feculent appearance. Under a continuance of the same

remedy the stools became, finally, entirely natural. Subsequently Dr. L. treated in a similar manner another case of dysentery, and with similarly speedy good results.—*Centralblatt f. d. Med. Wissenschaften*, Dec. 1868. D. F. C.

32. *Case of Acute Rachitis*.—In the *Jahrb. f. Kinderheilk.*, 1868, Dr. FORSTER describes a case of what he terms acute rickets. It occurred in a child, one year old, of whom the femoral bones of both inferior extremities, in their entire length, commenced to become painful, and to enlarge in diameter with considerable rapidity. In all other respects the morbid phenomena presented by the case were precisely the same as those described by Bohn as pathognomonic of acute rachitis, including even the peculiar affection of the gums. The etiological relations and course of the disease were also those laid down by him.—*Centralblatt f. d. Med. Wissenschaften*, Dec. 1868. D. F. C.

33. *Pathological Augmentation of the Length of Bones*.—E. BERGMANN describes, in the *Petersburger Med. Zeitschr.*, 1868, two cases which fell under his care, of the morbid increase in length of the bones of one of the lower extremities. The first of these was in a lad, 13 years old, who, since his ninth year, had been confined to his bed in consequence of a pain seated in his right leg. In this case it was only the tibia of the right limb that was increased in length some 5 cm. beyond the tibia of the left side. The os femores, as well as the os fibulae, on both sides, were of a corresponding length. Not only was the right tibia disproportionately long, but it was also increased in circumference. Its inner surface was uneven and rough, and the bone was somewhat curved from within outwards. The increase in length being entirely confined to the tibia of the right side, the pelvis was very slightly tilted, and there was no abnormal position of the right foot.

The second case occurred in a man 42 years old. When in his twelfth year he fell on his right knee, and for a long time afterwards complained of experiencing symptoms which Dr. B. referred to periostitis, or probably osteomyelitis of the bones composing the knee-joint. The tibia, at its upper part, was increased in circumference by an excessive deposit of osseous matter, and, together with the fibula, was morbidly increased in length. The difference in the length of the right and left legs was 7 cm. in favour of the right. The right femur exceeded the left by 2 cm.

Dr. B. suggests that these cases of pathological increase in the length and circumference of bone may be adduced in favour of the view which refers the growth of bone to the interstitial deposit of osseous matter.—*Centralblatt f. d. Medicin. Wissenschaften*, Dec. 1868. D. F. C.

34. *Simultaneous Occurrence in the same Patient of Two Acute Exanthemata*.—Two cases are adduced by Dr. STEINER, in the *Jahrb. f. Kinderheilk.*, 1868, in proof of what was formerly denied, the possibility of the occurrence at the same time of two acute exanthems in the same person. In the first of these cases there was a combination of *variola* and *measles*. On the fourth day of a febrile attack in a child, there occurred the indication of a variolous eruption—namely, papulae on different parts of the surface of the patient's body. On the next day the ordinary prodromata of measles presented themselves. By the eighth day both eruptions occupied the patient's skin; the measles especially prominent on the face. At the end of three weeks the child was entirely well. In the other case there was a combination of *measles* and *scarlatina*. After the usual prodromata there occurred the usual maculated exanthem of measles, and three days subsequently disappeared with a slight furfuraceous desquamation. At the same period, with febrile excitement, croupous angina, and nephritic affection, there was a diffused scarlet eruption upon the surface of the body, which at the end of three days gradually disappeared, and was followed by a lamellar desquamation. These cases are adduced by Dr. S. to show also that when two acute exanthemata concur in the same person, the second is always reduced below its ordinary intensity.—*Centralblatt f. d. Medicin. Wissenschaften*, Nov. 1868. D. F. C.

35. *Pruritus Vulvæ*.—It is stated (*Gazette des Hôpitaux*, Jan. 7, 1869) that this annoying affection is often entirely cured and always diminished by a lotion consisting of five parts of corrosive sublimate dissolved in fifty parts of alcohol. A teaspoonful of this solution is to be diluted with a pint of tepid water, and applied as a wash to the parts several times in the day.

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## SURGICAL PATHOLOGY AND THERAPEUTICS, AND OPERATIVE SURGERY.

36. *Cure of Carotid Aneurism by Digital Compression*.—A case of aneurism of the primitive carotid, successfully treated by intermittent digital compression of the arterial trunk, has been reported by M. ROUGE, of Lausanne, to the Society of Surgery of Paris. The patient was sixty-eight years of age, and a male. The compression was effected laterally, the thumb being placed against the anterior edge of the sterno-mastoid, the next three fingers under the posterior edge, and the artery being thus seized and compressed between them. Thus the pressure on the pneumogastric, which occurs when the carotid is compressed from the front against the sixth vertebra, and which is so painful, if continued, as to be the main cause of failure, was avoided. Digital compression was continued for seventeen days, for an average of seven or eight hours each day. Cases already on record, in which this treatment has been tried, are, Gioppi, 1858 (*Annales d'Oculistiques*, 1858, fifth part), Vanzeth, 1858 (*Archives Générales*, 1858), both successful; Delore, 1860 (*Gazette des Hôpitaux*). Ernest Hart, 1861 (*Lancet*), Scheppard, 1863 (*Gazette Hebdomadaire*, Feb. 19, 1864), successful.—*Brit. Med. Journal*, Feb. 27, 1869.

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37. *Antiseptic Treatment in Ligation of Arteries*.—Mr. LISTER exhibited to the Glasgow Medico-Chirurgical Society some specimens obtained on *post-mortem* examination of a lady, on whom, ten months ago, he had performed the operation of ligaturing the external iliac artery for femoral aneurism. She had been in fair health till a few days ago, when she began to suffer from a peculiar spasmodic derangement of the respiration. On Monday morning last, about three o'clock, she was sitting up in bed, when suddenly she said to her daughter, "Something has given way within me—I am dying," and immediately expired. It was found at the *post-mortem* examination that an aneurism of the descending part of the arch of the aorta had burst into the cellular tissue of the thorax, so that on the right side the subpleural tissue was filled with a mass of blood. It also appeared at first as if the blood had penetrated into the œsophagus, and it seemed singular that there had been no hemorrhage from the mouth. But on closer inspection it was found (as was shown in the preparation exhibited) that the blood was only inside the muscular coat of the œsophagus, and had not penetrated the mucous membrane. Of course, it was very interesting to examine the state of the artery which had been ligatured on the antiseptic system. (Mr. Lister here exhibited the vessels concerned.) The aneurism, which had been reduced to about the size of a large filbert, had been kept from consolidating at its lowest part by the régurgitant stream of blood from the profunda; that part of the sac being situated just at the place of bifurcation of the common femoral, so that it had served as a channel of communication between the deep and superficial trunks. The calibre of the external iliac artery was obliterated throughout, and near the point of ligature the vessel had dwindled to a mere shred of fibrous tissue. At the precise point where the ligature was applied, he found a small yellowish bead, larger than a mustard seed and smaller than a pea, and he fancied he could see the ligature through its walls. On scratching it with the point of a knife, a minute drop of liquid, somewhat like pus, escaped; and on looking for the further contents of the cavity, he found the ligature, but it was strangely altered. (Mr. Lister here exhibited the ligature.) It would be seen on looking at it, that the noose was

almost, if not entirely, absent. Two ends alone projected from the knot, and they were shorter than the thread was cut at the operation. It would be noticed, also, that the ends were tapering and thinned off. On the application of a magnifier to the knot, he found that it had undergone a loss of substance, having a marked appearance of erosion. He then proceeded to examine with the microscope the contents of the little cavity, and found among them unmistakable fibres of silk; but instead of having the ordinary appearance of silk, as seen in other specimens from the reel which had furnished the ligature, they were altered in various ways. Instead of being uniform rods or bands, they were irregular in form and serrated, and the ends, instead of the appearance which a cut thread has, were tapered like the end of a quill, or narrowed to a point. Besides these fibres he found a multitude of small fragments and debris of fibre, so that the silk thread had evidently undergone a process of disintegration. Besides the disintegrated silk fibres, he found granular matter, and corpuscles of different kinds, many of them being elongated cells, while others more or less nearly resembled those of pus, and among these were numerous delicate fibres. A camera lucida sketch of those appearances was exhibited. It was remarkable that silk should be so difficult of absorption. If not merely dead portions of the soft parts but even dead bone could be absorbed, when kept from putrefaction, it seemed surprising that silk—an animal product—should resist so long the absorbing agency of the tissues.

Dr. G. BUCHANAN said that with reference to the *rationale* of the circumstance alluded to by Mr. Lister, he might mention that he had, after amputation, &c., frequently tied small vessels with small sewing silk ligatures, cutting the ends close. He could not say that the ligature had been absorbed, or had been discharged; or absorbed in part, and discharged in part. He had often thought that it had formed for itself a small capsule, had become imbedded in the tissue, and not taken up into the system. It was evident that, apart altogether from the antiseptic system, they might leave a ligature of small thread on an ordinary vessel with much more safety than was at one time deemed possible.

Dr. LYON presumed that on the antiseptic system a small ligature of animal structure would have more chance of being retained, suppuration being less likely to supervene.

Dr. FLEMING said that there were one or two points in Mr. Lister's observations of great interest, both in a physiological and a pathological point of view. The fact of the ligature not having cut the vessel through is of importance, if the general inference be drawn from it that under the antiseptic mode of treatment the vessel is not divided, but the ligature becomes encysted. Above the ligature the artery here is found contracted, without any clot worth mentioning. Now, it was evident that if these were the results of tying a vessel on the antiseptic system, the risks of secondary hemorrhage were greatly lessened. In fact, if they could rely in any case that the vessel would not be cut through, the risks of secondary hemorrhage were completely got rid of. Another point of practical importance was the way in which the collateral circulation had been established. He was inclined to think that if the vessel had been tied in the ordinary way ulceration would have taken place, and there would have been secondary hemorrhage from the lower end—from the aneurism upwards.

Mr. LISTER pointed out that the mere saturation of the ligature with carbolic acid was not the only essential thing to prevent suppuration. It was equally necessary to apply other antiseptic treatment. The wound must be washed once for all with carbolic acid lotion, and an efficient antiseptic guard must be maintained from day to day to prevent the chance of putrefaction spreading inwards. It was in this that the real difficulty of the treatment consisted. It was of no use to apply carbolic acid internally without this guard—the carbolic acid was soon absorbed from the interior of the wound, which was then in a state susceptible of putrefaction, and must be carefully protected till the deeper parts were healed. He noticed the other day in one of the medical journals the report of a paper by a London surgeon who had treated wounds of the joints by injecting into the articulation a solution of carbolic acid. From the report it might have been imagined that this was the only treatment pursued. Now,

injecting carbolic acid into a joint could only have the effect of irritating the joint, and must prove mischievous instead of beneficial, unless followed up by external antiseptic dressing. As an example of the success attending ligature on the antiseptic system, he quoted a case from the *Lancet* in which a London surgeon (Mr. Maunder) had applied a ligature steeped in the acid to the carotid artery, cutting the ends short, and applying also an external dressing, with the result that the patient was sent away convalescent within four weeks, the wound having healed without any deep-seated suppuration or separation of the thread. With regard to the *rationale* of the vessel not being cut through, he believed it to be that, the ligature being destitute of all irritating properties, fibrous tissue, instead of granulations and pus, formed around the thread. With reference to the use of fine sewing machine silk for ligatures in ordinary wounds, such as stumps, he remarked that he believed he happened to have been the first to employ thread of such extreme tenuity for the purpose.—*Glasgow Med. Journ.*, Feb. 1869.

38. *Improvement upon Politzer's Method of Injecting Air into the Eustachian Tubes.*—Poltizer's method of injecting air into the Eustachian tubes is based, as most of our readers know, on his belief that when the *circumflexor* or *tensor palati* muscle is put upon the stretch in the act of swallowing, the mouth of the Eustachian tube is opened, and air is allowed to enter the tube.

Poltizer directs the patient to take a mouthful of water; the operator then inserts a canula into the right or left nostril, as the case may be; attached to this canula is an India-rubber bag filled with air; on the patient making a sign that he is about to swallow, the operator, closing the nostrils of the patient upon the canula with one hand, so as to prevent all egress of air, as the patient swallows, squeezes the bag, thereby injecting a strong current of air, which immediately rushes up the mouth of the Eustachian tube, which has been opened by the action of the *circumflexor* or *tensor palati* muscle in the act of swallowing.

Dr. BRENTON states (*Glasgow Med. Journ.*, Nov. 1868), that this method, though very useful in many cases, has some disadvantages arising from the want of harmony between the patient and operator. To obviate these disadvantages, Dr. B. has devised an apparatus by which the patient becomes also the operator.

The apparatus consists of an India-rubber bag (10 oz.), to which is attached a sufficiently long flexible tube, so that the bag may rest on the floor. To the other end is fixed a gum elastic canula, which the patient passes into his nostril. He then takes a mouthful of water, and as he swallows, holding his nostrils tight with the fingers, presses the bag with his foot, and thereby injects the requisite air.

Dr. B. says he has used this apparatus many times and always satisfactorily. The vapour of sulphuric ether and chloroform may be injected with ease by separating the bag from the tube, pouring a few drops of ether into the bag, then replacing the tube and proceeding as with common air.

39. *Mechanical Dilatation of the External Meatus of the Ear, with Compression of its Lining Membrane in Cases of Otitis Externa Acuta.*—Dr. J. GOTSTEIN, in the *Berliner Klin. Wochenschr.*, 1868, No. 43, contrary to the commonly received opinion that in diffused acute inflammation of the external meatus of the ear any attempt at forcible dilatation of the canal would most certainly augment the existing disease, recommends this very procedure for its cure if there be the least sign of contraction of the meatus. In two cases he trusted entirely the cure of the otitis to methodical dilatation and compression by means of tents of compressed sponge. In all cases of acute diffused *otitis externa*, Dr. G. recommends the introduction, as deep as possible into the meatus, of a conical-shaped portion of pressed sponge, about 3–4 cm. long, and 2.3 mm. in diameter at its largest end, to be kept constantly moistened by a few drops of lukewarm water; the sponge to be allowed to remain for from six to twelve hours, or even longer; the moistening with tepid water to be renewed at the end of every two hours. This latter is all important to facilitate the withdrawal of the tent. Ordinarily the introduction of the latter is not productive of pain. Its presence in the meatus gives rise only to a sense of distension; while in every instance, Dr. G. assures us, the symptoms due to the otitis

rapidly diminish. When suppuration has taken place, if slight, it will be found, we are assured, to be rapidly arrested. When the suppuration is of considerable extent, under the treatment by sponge-tents the pus can be allowed a ready discharge, the meatus kept clean, and, when called for, local remedies easily applied. In all cases treated as above, the course of the inflammation, we are assured, was cut short, in many with great promptitude.—*Centralblatt f. d. Medicin. Wissenschaften*, Dec. 1868. D. F. C.

40. *Traumatic Fractures of the Larynx*.—M. FREDET, in communicating a case which has come under his notice, expresses his surprise that so little is to be found on the subject of fractures of the larynx in manuals of surgery. A man, *æt.* 30, having engaged in a quarrel, was seized by the throat by a strong adversary, who, after throwing him on to the ground, kept him there some instants, with his hand on the anterior part of the neck. It was then found that the man could not rise, and was unable to speak, while his face was blood-shot. He was not seen by a medical man until next day, when he was found with a cyanotic face, and labouring under dyspnoea. His neck was emphysematous, but no fracture could be perceived. Under the influence of leeches, the swelling had nearly disappeared, and the breathing had become easier, but on the third day after the accident, while endeavouring to get into bed, he suddenly fell dead. At the autopsy a triple fracture of the cricoid cartilage was discovered. The most considerable occupied the median portion of the cartilage, and was as clean as if cut by a knife. The others were situated on the right and left lateral portions. The left arytenoid cartilage was incompletely luxated, and there was considerable oedema of the glottis, *cordæ vocales*, and epiglottis. The sudden death seemed to have arisen from the displacement of one of the fragments of the cricoid and the corresponding arytenoid, which, riding on the other, completely obstructed the passages of air. Having noted the principal facts of the few cases that are on record, M. Fredet observes that they may be divided into two categories as regards treatment. In the first, the affection is so slight as hardly to attract the patient's attention, and then silence and rest suffice. In the more complicated cases, the patient may induce death before any treatment can be put into force; or they may be accompanied by dyspnoea, cyanosis, convulsions, aphonia, tumefaction, or deformity of the neck, emphysema, &c.; and as death may be produced at any moment by displacement of the fragments, or by oedema of the glottis, the surgeon should, even when the symptoms are not very urgent, at once practise catheterism of the larynx, or, better still, tracheotomy. Had this been done in the case related above, the patient's life would probably have been saved.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1869, from *Gaz. des Hôp.*, Nos. 90 and 91.

41. *Conservative Treatment of Gunshot Fractures of Femur*.—In a letter addressed to Professor Palasciano, Signor GRITTI, Surgeon-in-Chief of the Milan Hospital, adduces the experience of the late Italian war as corroborative of his views of the value of conservative surgery in gunshot fracture of the femur contained in a work on that subject published in 1866. This additional material consists of 49 cases observed carefully during the war of 1866. Other cases must also have occurred of which no notes have been procurable, for as the wounded amounted to 3619, the proportion of 2 per cent. of cases of fractured femur, exhibited by former statistics, would bring the total number of cases up to about 70. However this may be, here are the results observed in these 49 cases. In 1 the head of the femur was fractured and the patient recovered; in 5 the trochanters were fractured, with 5 recoveries; in 6 the upper third of the shaft of the bone was fractured, all recovering; in 15 its middle third, with 5 deaths and 11 recoveries; in 6 its lower third, with 5 recoveries and 1 death; in 11 cases the condyles were fractured, with 2 deaths and 9 recoveries; in 4 cases, all recovering, the seat of fracture was not specified. Thus, of the 49 cases, 41 recovered and 8 died. So favourable a result calls for some detailed account, and this the author furnishes in a tabular statement of the particulars of each case as regards its treatment. Summing this up, he reports that in 30 of these cases, in which the conservative treatment was pur-

sued throughout, there were 2 deaths and 28 recoveries; in 12, in which conservative treatment had to be supplemented by amputation, 6 died and 6 recovered; and 7 cases, in which amputation within 24 hours was performed, all recovered. Thus, while of 42 cases treated conservatively, 28 recovered, all those did so in which immediate amputation was performed. Dr. Gritti, however, notwithstanding the remarkable success attending this operation, believes that it should be confined within narrow and precise limits, and that its success on this occasion was much owing to the exceptional circumstances under which it was performed. The patients were treated in small hospitals, in a healthy and mountainous locality, and were furnished with a nutritious diet. The 42 cases treated conservatively, with and without consecutive amputation, furnished a minimum mortality of 19.04 per cent.; and a more intelligent application of the principles of this treatment will be followed by still more favourable results. The dispersion of patients which acted so beneficially in the Austrian and Prussian armies was not easy of accomplishment in Italy, where the patients requiring prolonged treatment were consigned to overcrowded hospitals situated in the centres of towns, and often fell victims to typhus or pyæmia. The extraction of foreign bodies was not performed so effectually as it ought to have been, while the means of transport of the wounded were defective.

After adverting to some of the cases in particular, Signor Gritti concludes by saying that the clinical facts observed during this war confirm the value of the conservative treatment of fracture of the femur, especially when this takes place at its upper part, which is just the contrary to what happens in amputation, this failing more and more the higher up the limb it is employed at. But in order to succeed in conservative surgery the surgeon must be thoroughly indoctrinated with its principles. His exploration of the wound also ought to be prompt and complete, so that he may at once decide whether conservative or demolitory treatment should be resorted to. If the first is decided upon he should remove from the wound, making dilating incisions for the purpose if necessary, all foreign bodies and splinters; and then place the limb in an apparatus which at once secures its immobility and reduction, and allows of easy access to the wound. Had the surgeons employed in 1866 more exactly fulfilled these conditions they probably would have saved some lives by performing immediate amputation, while, in other cases, they might have avoided the too tardy extraction of foreign bodies, the development of phlegmonous and profuse suppuration, and perhaps some of the consecutive amputations.—*Brit. and For. Med.-Chir. Rev.*, Jan. 1869, from *Annali Universali di Medicina*, September.

42. *Periosteal Preservation in Operative Surgery.*—Dr. WM. STOKES, Jr., in a paper presented to the Surgical Section of the British Medical Association, in August last, states the following propositions, which are based on the physiological experiments and clinical experiences of M. Ollier especially, Langenbeck, Lücke, Moon, Wood, his own, and others who are interested in this subject. These are:—

1. That, in subperiosteal resections, the reproduction of bone is more complete, and effected with greater rapidity, than after total removal of both bone and periosteum.

2. That the osseous reproductive properties of the membrane vary according as it is taken from the long or short bones, being greater in the former than in the latter. (Ollier.)

3. That the normal form of the joint is better preserved than when the precaution of leaving the periosteal covering is taken.

4. That the subperiosteal resection involves less danger than when conducted on the old principle. This proposition is grounded chiefly on the results of Ollier's experiments on the lower animals; the number of unfavourable results which followed when the membrane was removed being much greater than when it was left.

5. That the difficulties attending the separation of the membrane in the dead subject are not to deter us from attempting the operation on the living, inas-

much as the membrane is less adherent in the latter, and also much thicker, in the great majority of cases, on the diseased than on the healthy bone.

6. That the chances of much shortening of the limb are diminished by this method, as shown by the results of the ankle-joint resections during the late Schleswig-Holstein war.

7. That subperiosteal resections are more conservative, as, in a great many cases, they diminish the necessity for amputation.—*Brit. Med. Journal*, Oct. 31, 1868.

43. *Excision of the Larger Joints.*—Mr. HENRY LEE, in a paper read before the Royal Medical and Chirurgical Society, November 10, 1868, gives a table of twenty-two cases in which excision of one of the larger joints was performed. The table includes three cases of resection of the head of the femur, and twelve cases of excision of the knee-joint. Out of the twenty-two cases death occurred in two cases only—namely, in the eleventh and fifteenth. In both of these diffuse suppuration in the cancellous structure of the bone had taken place. The author attributes the successful results obtained to the accidental circumstance of his having had a large proportion of cases in which the ends of the bones had been consolidated by previous inflammation, caused either by the presence of a piece of dead bone or by an abscess; and also to the fact of a large proportion of the cases of resection of the knee-joint having occurred in children. He considers that before the epiphyses are united to the shafts of the bones resection of the knee may be performed without injury to the cancellous structure of the long bones, and that in such cases, as well as where the cancellous structure has been previously consolidated, the great danger arising from purulent infiltration of the shafts of the bones is, in a great measure, avoided. The table presented is exclusive of a case of disease of the hip, and one of disease of the knee, in both of which immediate amputation was performed, as it was found during the operation that the bones were too extensively diseased for the operation of excision.—*Medical Times and Gazette*, Nov. 21, 1868.

44. *Results in Thirty-nine Cases of Excision of the Knee.*—Prof. HUMPHRY read before the Royal Medical and Chirurgical Society, November 10, 1868, a paper supplementary to one published by him in the *Transactions*, vol. xli., in which thirteen of the cases are related. Most of the remarks in that paper have been corroborated by his subsequent experience. The cases were all treated in Addenbrooke's Hospital. Twenty-eight recovered, gaining firm, sound, and useful limbs; two died, one from an attack of hæmatemesis, which seemed to have no particular relation to the operation; nine underwent amputation, of whom five recovered and four died. The operation was, in most instances, performed on account of synovial disease with ulceration of the cartilages and the bones, destroying the joint so as to leave no hope of its recovery to usefulness. In some it was performed for the purpose of removing a crippled useless joint from which the disease had subsided. The clean cut surfaces of the tibia and femur, if placed in good apposition and kept at rest, were commonly found to unite quickly and form a firm basis of support, so that the patient was able to walk, run, and work well; and there has been no liability to return of disease at the part in any of the cases. The limb should be kept straight; but even in the instances in which it became bent it was still very strong and useful. In the young subject, if the epiphysial, or growing lines of the femur and tibia are left uninjured, the limb may keep pace in growth with the other limb, and generally does so, or nearly. In the cases in which the operation did not succeed, the failure was generally due to continued suppuration in scrofulous or unhealthy persons. Professor Humphry makes a single external semilunar incision across, beneath the patella, is careful to remove all the diseased bone, and to leave the cut surfaces of the tibia and femur in good apposition, having taken pains to secure the bloodvessels by torsion. He pays great attention to the adjustment of the limb, in the first instance, with splints and bandages so arranged as to leave the line of incision exposed, and is very unwilling to disturb the parts afterwards. He not unfrequently allows an interval of five, six, or more weeks to elapse before he removes any of the bandages.



thus securing primary union throughout the wound, or great part of it, in several instances. He does not allow the patient to leave the bed till firm union of the bones has taken place.—*Ibid.*

45. *Amputation of Leg above Malleoli.*—Dr. GUYON brought, on the 12th of August last, a patient before the Surgical Society of Paris with a good stump. The surgeon makes an incision in front, three fingers' breadth above the malleolus, with the *concavity* downwards, and the incision is continued along the inner part of the leg, in the direction of the malleolar axis. When the knife has reached the upper extremity of the malleolus, the incision is carried in a slightly oblique direction, until it reaches the level of the sole of the foot at the lower extremity of the os calcis. The surgeon then re-ascends with his knife, on the outer side of the leg, to the point where the incision began. An elliptical cut is thus obtained. The tendo-Achillis should then be separated from the calcaneum, the lateral tendons cut, and the flap may be detached up to the line of the first incision. The muscles of the anterior part of the leg are lastly cut through, and the bones sawn as usual. In the flap, which is thick and broad, is the tendo-Achillis within its sheath, and the posterior tibial artery. The stump has turned out, after seven weeks, firm, regular, and well-cushioned, the cicatrix being on the front of the leg.—*Lancet*, Jan. 23, 1869.

46. *Dislocation of the Tendon of the Peroneus Longus Muscle.*—Mr. T. B. CURLING records (*Brit. Med. Journal*, Jan. 2, 1869) a case of this rare accident. The subject of it was a youth whose left foot slipped on a stone and turned outwards. He experienced considerable pain in the ankle, and on taking off his boot he found a projecting cord at the outer and front part of the ankle; this he easily pushed back with instantaneous relief. In the course of the following week the displacement recurred twice. By the application of an angular piece of cork to the margin of the fibula, confined by a suitable bandage, and care in using the limb, the tendon was kept in place.

47. *Fission and Extroversion of the Bladder and Epispadias, with the results of Eight Cases treated by Plastic Operations.*—This is the title of a paper communicated to the Royal Medical and Chirurgical Society, Feb. 9, 1869, by JOHN WOOD, F.R.C.S. The author commenced by stating that the frequency of this deplorable deformity was greater than was generally supposed. He had himself seen upwards of twenty cases. In its more usual form it was perfectly compatible with viability, and even longevity. One case is recorded by Flajani, of a person aged seventy, and by Quatrefages of two, aged forty-six and forty-nine respectively. It is much less common in the female than in the male; the author had seen two cases in the female, and operated on one. Cases are recorded by Huxham, Oliver, Bonnett, Thiebault, and Ayres, of delivery of a child at full time in females suffering under the deformity.

In both sexes the ossa pubis are widely separated, and the symphyseal surfaces can be felt projecting under the integuments on each side of the genital organs. In both, the hinder wall of the bladder is seen as a red, vascular, projecting tumour, often ulcerated, and discharging muco-purulent fluid and blood, and surrounded by a cicatrix, which above is blended with, and obscures, the umbilical mark. In the male, the penis is usually completely epispadic, with the urethra open along its entire length. The corpora cavernosa are stunted, and fail to cover the urethra above, and they are connected below by an imperfect corpus spongiosum, forming the lower half of the urethra. The glans penis is grooved above by the urethral gutter, but perfect underneath, and is provided with a frænum, and an abundant but split prepuce. The stunted penis is placed flat against the lower part of the bladder, usually covering by its root the papillary orifices of the ureters. The scrotum is perfect, and contains testes; and often a congenital oblique hernia, or a small ventral hernia, is also present. In the female, the clitoris is split, and the anterior commissure of the labia minora wanting, exposing more completely than in the male the orifices of the ureters, and laying open the urethra. The normal os uteri can be seen in the vaginal groove.

The author then reviewed the theories of the cause of the deformity, viz : that of Duncan and Bonn, who attributed it to the bursting of the fetal bladder from over-accumulation of allantoic fluid; that of Velpeau and Phillips, who considered it to be caused by ulceration of the hypogastric region between the second and third months of intra-uterine life; and that of Vrolik and other teratologists, who explained it by an arrest of development similar to those producing harelip, fissio thoracis, and ectopia cordis. He considered that the latter view was undoubtedly the correct one, but was of the opinion that the arrest of development was itself owing to a process of morbid change resulting in adhesion of the front part of the allantoic mucous and vascular layers to the membranes of the ovum at the site of the future placenta, at about the end of the first month. He gave drawings of the fetal allantoic formation at this period, and described varieties of the deformity illustrative of the period and extent of the arrest of development—from simple fissure of the urethra (epispadias), and of the urachus and abdominal wall simply (ectopia vesicæ), on the one hand, representing a later arrest of development; to those extreme cases presenting a common cloacal opening of the genito-urinary organs and rectum, with imperforate anus, on the other, which are the results of a morbid change and consequent arrest of development at a still earlier period than the cases which form the especial subject of the paper.

Mr. Wood next alluded to the efforts made by surgeons at various times, viz : Dieffenbach, Langenbeck, and others in this country, to relieve by plastic operations this frightful deformity, in all instances with partial or complete failure. He briefly described Professor Pancoast's case operated on in Philadelphia, and Dr. Ayer's in New York, attributing to the former the first adoption of the idea of turning flaps from the sides of the abdominal wall with the skin surface towards the exposed mucous membrane. Dr. Ayer's case was that of a female who had borne a full-grown child four months before, and was entirely successful after two operations. He also alluded to the operations performed by Mr. Holmes in this country. He then gave a detailed account of eight cases in which he had himself operated between the years 1863 and 1869. In seven of these he had been successful in providing a complete covering for the bladder. In the last two he also succeeded in covering the penis with a prepuce, completing the upper wall of the urethra, and forming a fair substitute for the meatus urinarius. In one case (the only female operated upon) an entire failure had resulted, in consequence of the extreme youth and violent crying of the patient.

Three methods of covering the bladder had been employed. The first was by two lateral flaps taken from the groin, with their bases towards the thigh, scrotum, and penis, and united by sutures in the median line, with their raw surfaces towards and touching the exposed mucous membrane of the bladder. After many operations, necessitated by partial failures of the plan, the bladder was at length completely covered in, with only one opening, placed at the root of the penis. The boy died afterwards of erysipelas of the head and face, and the parts operated on were shown in a preparation, the bladder being opened behind to show the union of the flaps within, and the formation of a pseudo-mucous membrane on the raw surface.

The next method consisted in the employment of one reversed lateral flap, in combination with a smaller reversed umbilical flap, both turned with their skin surfaces towards the bladder, and covered by another larger lateral flap, placed with its raw surface downward upon them. The reversed umbilical flap was adopted to obviate the great difficulty experienced in the earlier cases in closing up a fistulous opening which remained above the bladder. It cannot always be employed with safety, in consequence of the extreme tenuity of the abdominal parietes at this part in some of these cases. It was found better to attempt it at the time of the first operation than by a subsequent one, and to make it large enough to afford a firm hold by primary adhesion to the lateral flaps which cover it.

The third method employed consisted in the formation of a larger umbilical flap, turned with its skin surface upon the bladder, and big enough to cover its exposed mucous membrane as far down as the root of the penis. This was

covered by two lateral flaps taken from the groin, with their bases towards the penis, scrotum, and thigh, and united in the median line over the umbilical or reversed one, with their raw surfaces in contact with it. By this means the author succeeded, in five cases, in covering by one operation the entire surface of the bladder.

In this step of the operation the chief features of the author's plan, as most successfully practised, are the use of the broad, reversed umbilical flap, to prevent the upper fistulous openings; and the arrangement of the lateral or groin flaps with their bases turned towards the scrotum and thigh, so as to receive for their supply of blood the external pudic and superficial epigastric vessels from the common femoral uninjured, and so to prevent sloughing or shrinkage.

In the second step of his operation, as performed in the last two cases, viz: that of providing a preputial covering for the glans penis, and an upper wall for the urethra, the author availed himself of the front part of the scrotum and the skin of the lower surface of the penis, which he raised from the deeper parts in the form of a bridge of skin, retained at both ends to its original connections, and lifted in the middle over and across the penis, like a saddle. This was placed with its raw surface in contact with that of a reversed fold of skin, turned over from the sides of the opening left by the first operation, the whole being held together by a continued wire suture. The sides of the wound in the scrotum were then brought together vertically over the tunica vaginalis and testicles, the hinder half of the bag of the scrotum being amply sufficient to cover the whole. This part of the operation proved entirely successful in the last two cases, which were the only ones in which the method has been tried.

It was stated by Pancoast that the hairs which afterwards grow on the reversed surface of the flap became gradually shed by the depilatory action of the urine upon them. In the author's two last cases, both adults, this process is certainly going on, but it is still necessary to remove some of the hairs as they grow, by the use of a pair of forceps passed into the artificially formed meatus urinarius. This is, however, a process requiring only a little trouble and dexterity on the part of the patient himself, and to be repeated whenever the incrustation of the phosphates upon them causes uneasiness. A very dilute nitric acid lotion aids in the process of cleansing. In future adult cases, the author proposes to use a depilatory upon the parts previous to operation. As the cicatrices contracted, the orifice of the artificial urethra became more tightened and braced up, and the transplanted dartos could be felt to clasp the finger vigorously when passed into the opening. Already the urine sometimes accumulates in the bladder, when the patient is lying down, in sufficient quantity to be expelled in a stream, on rising, to the distance of a few inches from the penis. In both cases no sinuses now remain. They now wear a silver-plated instrument connected with an India-rubber urinal, made by Mr. Matthews, of Portugal Street. It is closely fitted round the penis, not inclosing the scrotum, thereby removing the pain and annoyance from the sores and tenderness which the trickling urine caused upon the surface of the scrotum. During the night, when the patients lie in the recumbent position, very little urine escapes—not more than can be caught by a sponge placed under the penis; and in the day-time a much smaller and less conspicuous urinal can be worn than that which was necessary before the operation.

The last case operated on by the author—that of a man aged thirty-five—was exhibited to the Fellows at the meeting. An India-rubber ring can now be placed round the artificial prepuce and the corona glandis, so as to retain the water entirely for a short time. The paper was illustrated by numerous casts, models, and drawings from the several patients in various stages of the operations.—*Lancet*, Feb. 20, 1869.

48. *M. Amussat's Double Lithotome*.—M. AMUSSAT communicated to the Academy of Medicine some time since, a description of a double lithotome, of very simple construction, which has not the inconveniences of that of Dupuytren, and which enables the surgeon to extract by the perineum the largest calculi which can pass through that region.

The accompanying figures—for the opportunity of laying which before our readers we are indebted to the politeness of M. A. Jr.—will afford a very exact idea of the instrument. Fig. 1 represents the instrument, half the natural size,

Fig. 2.

Fig. 1.

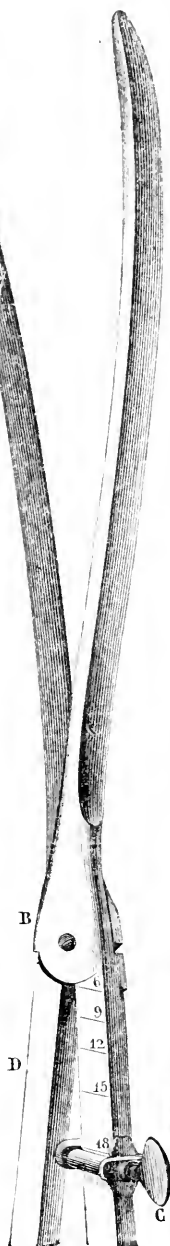
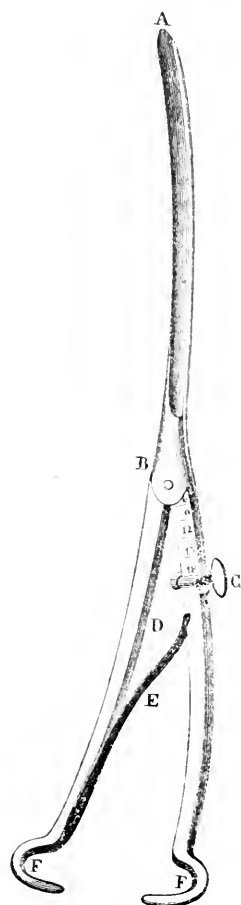
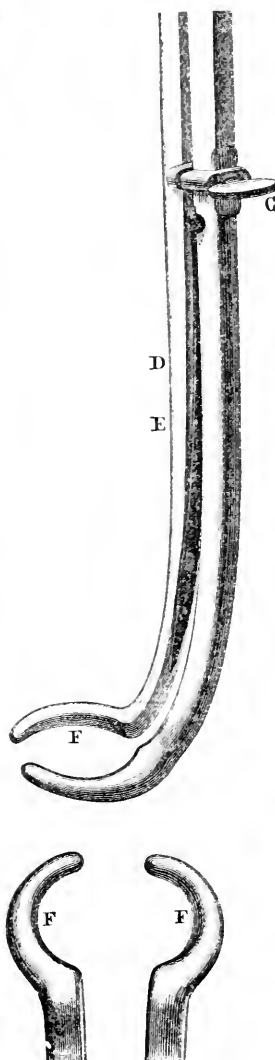


Fig. 3.



closed preparatory to introduction into the bladder, which is effected by sliding the extremity *A*, of the probe-pointed blade in the groove of a director. This lithotome consists of scissors curved on their flat, the blades of which cross, and are held together by a screw. When opened they cut outwardly; when shut each cutting edge is protected by the rounded back of its fellow blade, and thus cannot wound the parts. One blade is longer than the other, and terminates in a probe-point. There is a graduated scale on one branch, which indicates the extent of separation of the blades, and a slide which can be fixed by a screw. A spring is attached to the inside of the handles, *E*, Fig. 1. On pressing the handles together, the blades separate and present externally their cutting edges. The extremity of each handle is furnished with a hook, *F*, which can be used, when necessary, as a suspensory of the bladder in the hypogastric operation for lithotomy. Fig. 2 represents the instrument of a natural size, with the blades separated, as when used for incising the parts. *A* is the probe-pointed blade; *B*, the joint; *C*, slide which regulates the extent of separation of the blades. Fig. 3 represents the handles, natural size. *E* is the spring which separates the handles and closes the blades of the lithotome; *F*, *F*, hooks which terminate the handles, and can be used to raise up the anterior parietes of the bladder in hypogastric lithotomy.

We are further indebted to M. Amussat for a description, with figures, of an "*irrigateur vesical*," which he exhibited to the Surgical Society of Paris, Aug. 5, 1868, and a description of which, with figures, we will lay before our readers in our next No.

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49. *Ectopia Vesicæ*.—M. GRANDJEAN, in a thesis on this subject, relates a successful case, the first in France—a male child, fourteen months old, operated on by M. Michel. The conclusions are, that the vesical papillæ of the ureters should never be incised. The operation by superimposed flaps—the one abdominal, the other lateral—is preferable. The union of the autoplasmic flaps should rather be by their surfaces than by their borders. The operation should be performed at the end of the first year, or as soon after as possible. The thesis gives a complete bibliography.—*Brit. Med. Journal*, Feb. 27, 1869, from *Gazette Méd. de Strasbourg*, Dec. 25, 1868.

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50. *Puncture of Colon for Relief of Tympanitis and Fæcal Obstruction*.—Dr. T. CLIFFORD ALBUTT, Physician to the Leeds Infirmary, sends us the following interesting note:—

"It is about two years since my colleague, Mr. Wheelhouse, was kind enough, at my request, to tap the distended pericardium of a patient who was in imminent danger of death, and with perfect success. I have now to thank Mr. Teale for a like interference.

"——, aged 40, labourer, was admitted into the Leeds Infirmary on Jan. 4th. He was admitted as suffering from 'obstruction of the bowels.' On investigation, Mr. Bradley found that although the bowel symptoms were more prominent, yet the patient was suffering also from double pneumonia. He told me that he was led to examine the lungs because he had seen obstruction of the bowels more than once in connection with pneumonia. I was also aware of this coexistence of paralyzed bowel with pneumonia, and have explained it by supposing that irritation from the inflamed structures reaches, and finally exhausts, the colon. I have certainly seen it in several well-marked cases, when it has proved a very distressing and unmanageable symptom. My explanation seemed certainly to be true in a somewhat similar case of bowel paralysis attended by Sir William Jenner, Dr. Beaumont of Knaresborough, Mr. Bainbridge of Harrogate, and myself,<sup>1</sup> where paralysis of the bowel was set up by inflammation near it, and such paralysis, we know, often occurs in peritonitis. In such cases of simple paralysis, or of fecal accumulation with distension, I think the mode of treatment I am about to propose may turn out to be of great importance. In the present case Mr. Bradley administered subcutaneous injections of morphia, and full enemata both with and without turpentine and castor oil. No relief was obtained. No feces had now passed from the bowel for at least five days,

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<sup>1</sup> Vide *Lancet*, July 18, 1868.

and no wind had passed for about two days. The abdomen was enormously distended, and caused intense suffering; the pulse was small and quick, the extremities cold, and the countenance very anxious. In the evening Mr. Bradley requested me to see the patient. His state remained the same. I advised an injection of a quart or more of warm gruel to be slowly administered with a long tube, this to be followed by an injection of half a pint of olive-oil in the hope that the oil might rise through the gruel and reach the obstruction. Belladonna liniment was also to be applied all over the abdomen, and the subcutaneous injections to be continued. About three pints of fluid were got into the bowel, but no feculent discharge followed: the liniment gave some relief. Next morning I found the patient in great suffering; he had not passed any wind, and he had spent a wretched night. He now had also a decided hiccough, and the abdomen was enormously distended. There neither was, nor had been, much vomiting. The previous evening I had been much tempted to puncture the abdomen with a fine trocar, and in the morning the desire strongly returned. Somewhat later in the day I was with Mr. Teale, and after laying the case before him, I asked him if he would operate for me. He agreed to do so, and we visited the infirmary at once. We found the patient in great distress; he was tossing restlessly about in bed, complaining of the distension of his abdomen, and the breathing was seriously impeded. Mr. Teale plunged an exploring trocar (No. 1, Weiss) into the distended transverse colon. On withdrawing the trocar air rushed through the canula with a hissing noise and the abdomen slowly fell. The air was highly offensive. When the current grew weaker, Mr. Teale made a second puncture into the descending colon, which was greatly swollen; the result was the same. The body had now fallen much, and had become quite soft; the patient expressed the greatest relief, and thanked us warmly. His countenance became placid, the breathing comparatively easy, and he soon sank into sleep. I ordered the morphia to be continued, and poultices to be kept on the body. On my visit next day I found our treatment had been remarkably successful. Not only had the relief continued, and the poor man slept comfortably; but the bowels had recovered their activity. He had passed a great quantity of wind to his great comfort, and many stools; some of these stools were seen by Mr. Bradley, who reports that they were copious and feculent. So far, then, the operation seemed to have been eminently successful. Unfortunately the pneumonia had not stayed its course, and the whole of one lung behind was now consolidated, and more than half of the other. He sank from the lung mischief in about two days more—the abdomen becoming again somewhat distended before death. At the autopsy, almost the whole of the left lung was found in a state of ‘hepatization,’ and a large part of the right lung also. The other organs were healthy: in particular there was no trace of peritonitis, nor had any air escaped into the peritoneal cavity. No traces of the punctures could be detected except upon the outside of the body. I need not stay to point out how often patients beg for relief from a distended abdomen, nor, I think, to show that the simple and painless operation which we practised proved to be quite without danger, and gave great and immediate relief, not only by emptying the bowel of wind, but by enabling it to contract upon, and to repel, the feces which obstructed it. The operation is one which any physician may have recourse to in a moment, and if he has not a fine trocar at hand he may use the needle of the morphia syringe. I may add, that the autopsy did not seem to support my view of the causation of the bowel paralysis. There was no appearance of inflammation on the under side of the diaphragm, nor was the surface of the bowel injected with blood.”—*The Practitioner*, Feb. 1869.

## OPHTHALMOLOGY.

51. *Interesting Case of Defective Vision*.—Major TENNANT, R. E., communicated to the Royal Astronomical Society the following particulars of certain defects in his own vision, and of the means by which they were corrected. This

account is interesting in several particulars, and may also perhaps lead to a new theory of the cause of the inability to distinguish colours which is peculiar to some persons, and sometimes results from disease.

"Many years ago, soon after I came to India, I found in looking at the Snowy Ranges of the Himmaleh with a telescope that to my eye the snow had a reddish-brown tint. Shortly after I found that this was not the same for both eyes, but that, in passing from my right eye to my left with a telescope, I seemed to pass, as it were, from the brownish tints of autumn to the brilliant ones of spring. Every object became brighter and clearer, and the greens were especially affected. Close examination showed me that the vertical and horizontal wires in a telescope were never pleasantly seen together. One was always clearer than the other, and any occasional perfect vision passed away after the effort to see wore off.

"I came to the conclusion then that there was really some defect in my eye. In 1857 and 1858 I was examining many of the double stars in Smyth's *Cycle*, and it struck me that I could not see blue stars two magnitudes larger than others there described which I did see. I also noticed that the very red stars described had never produced on me any marked impression of colour, and I deduced that my eyes were really somewhat insensitive to the blue rays.

"So matters stood till December, 1867, when I accidentally saw an optometer at Messrs. Horne & Thornthwaite's, which led me to ask Mr. Acland of that firm to examine my eyes. He came to the conclusion that I was somewhat shortsighted, and that the lenses of the eye did not refract as solids of revolution, but that a plano-cylindrical convex lens of 30 inches radius would nearly adjust my vision. I tried these, and, after finding the proper positions of the axes of the cylinders, found that the definition was enormously improved, and that the left eye was, as I thought, nearly perfect, and the right eye nearly as good as the left originally, but I was firmly convinced that I was not shortsighted. At last, however, I became convinced that I was so with these lenses, and a spherical surface of the same radius as the cylinder was ground inside it. Now my vision was superior to anything before. On the voyage out I have often seen eight stars of the *Pleiades* (and notes of their places are in a notebook) where I never before saw more than five; but I found now I had become longsighted, and could not use the glasses for reading, and became convinced that Mr. Acland's statement was correct, namely, that I was shortsighted, not because the near focus was short, but because I had a want of the usual range of adjustment and could not reach the distant one; when, therefore, distant vision was corrected the near vision became defective. I therefore made up my mind to have two sets of lenses.

"But before ordering them I determined to re-examine my eyes with great care, and I now found, on using an achromatic glass as an eyeglass, and a peculiar object, that, in reality, the estimate I had made of the improvement in my right eye was very nearly right. I now found that the convex surface for the right eye required a radius of 20.5 inches, and for the left eye one of 40, and that the concavity for distant vision required to be 27.5 inches in radius for each.

"The red tint now remained to be accounted for, and I have been led to what I believe to be the true solution of that, and also of the insensibility of the right eye to blue light. I should mention that habit makes me see mainly with the right eye; that is, that its image clearly predominates in ordinary vision.

"I had noticed that while my general vision of stars was much improved with the spectacles I had brought from England, and the sky became dotted with small objects invisible without them, some stars certainly were less clear. It only occurred to me recently on that occasion that a *Scorpii* was injured and *Saturn* improved in definition by the glasses, and I then remembered that a *Scorpii* had generally been the defaulter, the extreme beauty of that constellation having made it always catch my eye. It is evident now that my right eye is not achromatic, that the red rays being naturally focussed predominate in vision, and that when the luminous image of a star is focussed the blue rays do not claim notice, but when a blue star is seen, if it be so small as to be near the minimum of brightness, its image is too diffused to be visible.

"Now, my vision I used to think good. I have often at sea caught the masts and rigging of a ship before those searching for them; and the defects which I have spoken of I have frequently believed to be fancies, as they seemed inconsistent with many evidences that I had good vision. I should certainly have unhesitatingly trusted my eyes in any matter but colour. Possibly some of the strange discrepancies in description are due to similar defects of vision and we may, some day, find it necessary to make every observer of delicate phenomena, who claims credit, *prove that he can see.*"—*Scientific Opinion*, Feb. 24, 1869, from *Monthly Notices of the Royal Astronomical Society*, Feb.

52. *Colour-Blindness*.—Dr. ARGYLL ROBERTSON states (*Edinb. Med. Journal*, Feb. 1869) that colour-blindness is not an unfrequent symptom of advancing amaurosis, and he expresses the belief, in which we fully concur, that it would be found to exist far more commonly than is supposed, were patients more frequently tested on the point. Dr. Moritz Benedict states (*Der Daltonismus der Seheenen, Atrophie*, Arch. f. Ophth., Bd. x.) that during two years he has frequently observed colour-blindness, especially of red and green along with amaurosis accompanying tabes. He narrates six cases in which he found colour-blindness and amaurosis combined. Poland (*R. Lond. Oph. Hosp. Rep.*, vol. vii.) and Dr. Geo. Wilson (*Researches on Colour-Blindness*, 1855) each narrates cases caused by injuries to the head.

A case of colour-blindness with partial amaurosis, the result of disease, was recorded by the editor of this Journal, in the No. for Aug. 1840. Other cases will be found noticed in the editor's edition of Lawrence's "Treatise on the Diseases of the Eye," third edition, Philadelphia, 1854.

According to Mr. ERNEST HART (*Brit. Med. Journ.*, Jan. 16, 1869), "the true chromatic organs of the eye may be considered to be the cones, each of which bodies acts as a small prism, decomposing the light, so as to form at its base concentric coloured circles corresponding to the colours of the solar spectrum. The following are some of the chief results of clinical investigations made by using a fixed scale of colour types, in which scale the principal colours of the spectrum are arranged in the order adopted by M. Chevreul. In retinal apoplexy, when the effusions are large or situated in the central parts of the retina, the eye often sees objects coloured red or green, which coloration is sometimes changed during the course of the disease into violet or yellow. In albuminuric retinitis, partial colour-blindness is a symptom of advanced disease and disorganization of the retinal tissue near the yellow spot. In syphilitic inflammation of the deep-seated parts of the eye, perception of green colours, and sometimes of red, is lost. In cases of atrophy of the optic disk and of amblyopia caused by chronic alcoholism, similar perversions of the chromatic sense are presented; there is anæsthesia of the retina to certain compound colours, as light and dark green; violet is also taken for red, and brown for green. In atrophy of the disk, these aberrations are permanent; whilst in spirit-drinkers, they vary from day to day, and even hourly, presenting a succession of abnormal visual phenomena. Descriptions are also given by Galezowski of colour changes occurring with glycosuric retinitis, general and localized atrophic choroiditis, and during the course of various cerebral affections. These I have not fully verified. The remarkable morbid changes which occur in these diseases, do not appear to me to be so precise and uniform as described. But I am pursuing the clinical inquiry with care, and shall shortly publish some further results. The subject is an extremely interesting one, and deserving of careful study, as the chromatic scale is, in my opinion, an addition to ophthalmic means worthy of cultivation, and likely to be of value in the diagnosis of many cases of amblyopia, of which both the ophthalmoscope and the nature of the subjective symptoms fail to give any full explanation."

53. *Visual Hallucinations*.—A description is given by NÆGETI, in the *Bayr. Acad. Sitzgaber* (1868, 1), of certain hallucinations of vision occurring in his own person whilst he was confined to a darkened chamber for many days, in consequence of an injury inflicted by fire on the cornea, especially of the left eye. The hallucinations were various in character, though they consisted mostly of



landscapes, or the forms of persons, or of other objects. These hallucinations, in the course of N.'s observation of them, often underwent the most unexpectedly grotesque movements and changes; at other times they remained stationary. They appeared sharply and clearly defined, and remained long enough to allow of their careful examination—resembling, by no means, pictures produced by the painter's pencil, but gave the same impression as though they were, in fact, natural existing objects. N., during health, had never before been the subject of similar hallucinations. He believes they were seen by the left eye alone. It is true, that by rapidly opening and closing the lids of the right eye, the cornea of which had been slightly injured, there appeared before this eye another clear picture, which quickly vanished; the pictures which occupied the whole field of vision were produced evidently by the left eye alone. The hallucinations above described did not originate in any morbid excitement of the brain, nor certainly from any preceding impression upon the sense of vision; nor were they the least under the control of the will.—*Centralblatt f. d. Medicin. Wissenschaften*, Oct. 1868. D. F. C.

54. *Sympathetic Ophthalmia*.—MR. HAYNES WALTON records (*Lancet*, October 17, 1868) the following instructive case:—

“A farmer was accidentally shot in his right eye twenty-seven years ago. The eyeball was penetrated; some of the vitreous humour escaped directly, and with it two shots. Vision was destroyed. The inflammation which followed subsided in a few weeks. For twenty years he suffered no inconvenience in his eyes, but now the left eye occasionally became inflamed from exposure to cold winds, or from any irregularity in diet, such as drinking too much. The attacks became more frequent without any apparent exciting cause, and in 1866 this gentleman was brought to me by Dr. Edward Lawford, of Leighton-Buzzard. I found the eye damaged from the repeated attacks of inflammation; the iris was discoloured and bulging, and the pupil nearly generally adherent. The vitreous humour was a little hazy; vision was imperfect. As I could not detect any irritation in the wounded eye, which was very much shrunken. I thought I had before me a case of rheumatic ophthalmia, and prescribed accordingly. I saw my patient several times afterwards, during successive attacks of inflammation. The eye got a little worse, in spite of all treatment and all care, and sight was fast failing. On his last visit to me I examined the collapsed eye very carefully again, and pressed it firmly between the fingers. This caused much pain. A repetition of the pressure produced the same effect, and the patient said, ‘No pressure hurts the other eye, but this is most intolerant of any.’ I was now quite satisfied that there was irritation here, which was affecting the other eye, and I recommended the removal of the stump. This was at once acceded to, and I operated. A grain of shot was discovered in a mass of fibrinous effusion. Besides this there was a cup of bone deposited between the sclerotica and that which remained of the choroid. The left eye commenced to improve from the very hour of the operation. The pain disappeared, the muscæ decreased, and vision improved. At this time, two months from the operation, vision is still better, and small type can be read. The vitreous humour is almost clear. I have no doubt that the vision will improve still farther.”

55. *Operative Treatment of Conical Cornea*.—VON GRAEFE, in the course of an article which deals elaborately with the whole subject of this disease, dwells upon the ill-success which has attended all the various operative procedures which have been devised for its relief. Long-continued treatment with atropia and with bandage-pressure, repeated evacuation of the aqueous humour by paracentesis of the cornea, iridectomy, making the pupil into a long slit, like the pupil of a cat, by double iridectomy, on Bowman's plan—all these measures have proved highly unsuccessful. Graefe has, however, lately devised a method which has already succeeded, in several cases, far better than any previously known plan. A little flap (three-quarters to one line in thickness) is made, with a very narrow knife, from the apex of the corneal protrusion; and this is cut away along its base with scissors. On the next day the new surface is touched with a mixture of one part of nitrate of silver and two of nitrate of

potash (lapis mitigatus); and this is repeated every third or sixth day, till a slight yellowish infiltration becomes apparent. The surgeon must then drop in atropia, and wait. In from six to eight weeks there is an exfoliation of the cornea, which brings about a notable improvement in the clearness of vision.—*The Practitioner*, January, 1869, from *Berlin. Klin. Wochensch.*, 23, 24.

56. *Detachment of Retina Cured by Operation.*—Mr. J. Z. LAURENCE states (*Lancet*, March 6, 1869) that "Detachment of the retina from the subjacent choroid may be caused by a solid or a fluid. In the latter case the retina, separated from the choroid by fluid effusion, projects into the vitreous humour in the form of a spheroidal protuberance. The retina generally becomes thus separated first at its upper part; as the effusion of fluid increases, the retina becomes detached more and more downwards, till it is detached so completely that the field of view becomes totally destroyed, and the patient perfectly and incurably blind. The upheaving of the retina may aptly be compared to that of the cuticle by a blister. If the cuticle be pricked, and the contained fluid let out, it resumes its apposition to the subjacent cutis.

"Acting upon this principle, Von Gräfe, Mr. Bowman, and other eminent surgeons have punctured the retina with needles, in the hope that the subjacent fluid, by escaping and mingling with the vitreous, would permit of the retina reassuming its apposition with the choroid, and resuming its visual functions. In very few cases, however, has that hope become realized.

"The idea occurred to me that a more happy result might be obtained by puncturing the bag of fluid through the sclerotic and choroid *without inflicting any wound whatever on the retina*, and thus allowing the effused fluid to escape *outwards* into the subconjunctival tissue, instead of inwards into the vitreous humour. I have lately operated on a case, the details of which I will here but briefly allude to.

"A man, aged fifty-three, presented himself with complete detachment of the upper two-thirds of the left retina. He was completely blind in the lower and outer half of his field of vision, and had mere perception of light in the other half. On January 18th I pierced the upper and back part of the sclerotic and choroid with a broad needle. A quantity of colourless fluid immediately escaped into the subconjunctival tissue. From that time the field of vision steadily increased till on February 11th, it became absolutely entire, and at ten feet he read easily C of Snellen's types. At the same time the fundus of the eye, including the optic nerve, vessels, etc., was perfectly well seen; whilst previous to the operation it was all but obscured by the detached retina, not a trace of which could now be seen."

## MIDWIFERY.

57. *Stricture of the Internal Os as a Cause of Miscarriage.*—Dr. WILLIAM MARSHALL relates (*Glasgow Medical Journal*, Feb. 1869) the following instructive case: He was called to a delicate woman, æt. 30, five months advanced in pregnancy:—

"The pains were strong and forcing, very similar in character to those which immediately precede the expulsion of the head in a primipara. I was told that when pregnant last she had miscarried at the fifth month, and that the pains then, for three hours, had been very severe—much worse than she had ever had in any confinement, and similar to what they were now. On examination, I found the os uteri dilated to the size of half a crown, and very soft. On passing my finger further up in order to feel the fœtus, I found the canal of the cervix becoming decidedly narrower, when suddenly she cried out that I was cutting her, and jerked herself away. On a second attempt the same thing was repeated; but on a third, being prepared for her moving, I ascertained that a tight resisting constriction existed at the internal os, which would not admit the tip of the finger. As soon as I touched the constricted part, she

complained of a severe cutting pain; and on attempting to pass the finger through it, she became hysterical, and on my persisting, *perfectly maniacal*. On withdrawing my finger she immediately became rational, and complained of the agonizing pain I had caused her.

"As she was quite positive that in her previous miscarriage she had suffered for three hours as much as she was doing now, I waited for a couple of hours. During this time the pains were very strong, and the suffering greater than I had ever seen in any confinement. In order to make a thorough examination, I put her under chloroform. The external os was very soft and dilated; but at the internal os there existed a constriction which still readily allowed the finger to pass through, and which seemed now quite dilatable. The breech was presenting, and I had no doubt that when a pain came it would be pushed through, and the whole thing soon be at an end. The pains, however, did not return as long as I kept her under chloroform, so that I was forced to discontinue it. The stricture returned with the first pain, firmly grasping the tip of my finger, which I had retained in the uterus. I now gave her a dose of ergot, and waited until one o'clock, when, finding that little or no progress had been made, I determined to notch the stricture in one or two places, under chloroform, as it was impossible to touch it without causing intense pain, and bringing on a maniacal paroxysm. I went home for a probe-pointed bistoury, and on my return in half an hour, found the strictured part, with the breech forced into it, protruded through the external os, which was drawn up around it. After a few pains, the breech passed through the constriction: I pulled down the body, and finding that the head would not come, pushed my finger past it, hooked it over the crown, and pulled the head through the stricture. Without withdrawing my finger, I detached the placenta, and withdrew it and the finger at the same time. While doing all this, the patient was perfectly maniacal—she shrieked, kicked, struck, and bit at those around her. Immediately on withdrawing the finger she became rational, and apologized for what she had done; the agony had been so intense, she said, as to drive her for the time out of her senses. She recovered without a bad symptom."

Dr. Marshall makes the following remarks on this case:—

"*Firstly*. With regard to the stricture itself, it is remarkable (1) that a stricture should have existed in such a spot; (2) that it should have been so exquisitely painful to the touch; (3) that the pain should have given rise to paroxysms of hysterical mania. May not some forms of puerperal mania depend upon a uterine lesion acting on an hysterical system?

"*Secondly*. That the stricture was the cause of the miscarriage in this and the previous pregnancy I have no doubt. I have never seen this mentioned as a cause of premature labour. The uterus, up to the fifth or sixth month of pregnancy, grows and expands almost entirely in its upper part. At that time it enlarges downwards from the internal os; but in this case the stricture would not allow it to expand, and by continued irritation, induced labour-pains.

"*Thirdly*. If this be true, it throws some light upon "What is the cause of labour?"—a point, I believe, still undetermined. If you examine the uterus at the eighth month, you find a considerable portion of the neck still unexpanded; if you examine at the end of the ninth month, you find the neck entirely obliterated. What happens then? Does the uterus stop growing? No: it still continues to enlarge downwards, and it can only do so by dilating the os. Had this stricture been situated at the external os, the uterus would have gone on growing until the end of the ninth month, and then, just as in the miscarriage, by irritation of the stricture, labour-pains would have set in. It is not necessary, however, to invoke the aid of a stricture at the external os to induce labour-pains. The os is the most sensitive part of the whole organ; to dilate or irritate which is to bring on pains. This the natural growth of the uterus does; then, those contractions of the uterus, sometimes painful and sometimes painless, which occur every hour or two during the latter months of pregnancy, recur with greater frequency; the membranes and the head of the child are pushed down upon the os, exciting it more and more to induce pains by reflex action, until finally the labour is accomplished. This I have long regarded as the explanation of the cause of labour: the natural expansion of the uterus, act-

ing on the sensitive os, begins to dilate it, and through it reflexly the necessary pains are called forth."

58. *Extra-uterine Fotation*.—Dr. EVORY KENNEDY, of Dublin, records (*Brit. Med. Journ.*, Jan. 23, 1869) three highly interesting and instructive cases of extra-uterine fotation. In the first case the patient died from hemorrhage caused by rupture of the right Fallopian tube.

In the second case there was also internal hemorrhage which completely prostrated the patient, but under careful treatment she recovered. Dr. Kennedy lost sight of the case afterwards, so that the history of it was not complete.

The third case Dr. K. saw with Dr. Dwyer. Dr. K. gives the first part in the words of Dr. Dwyer, and the latter in the words of Dr. Churchill:—

"Mrs. — has had one child, at this date (October, 1844) ten years old. About two years since, she fancied herself pregnant; her menstruation having become scant and painful, accompanied with profuse leucorrhœa, occasionally tinged red. I treated her for these symptoms; and, on her recovery, did not again see her until September 4, 1846, when she was suffering from symptoms of early pregnancy. Her last period had been on 16th July, 1846; it was natural, and she expected her confinement at the end of April, 1847. She now commenced suffering from *malaise*, with uneasy sensations in the uterine region; and, on October 20th, these became so acute that Dr. Kennedy was called in to see her with me. Fomentations and sedatives were directed, and with relief, for some days; when, suddenly, there set in agonizing pain in the right uterine and iliac regions, attended with vomiting and great prostration, with extreme shabbiness of pulse, indicating apparently some peritoneal injury. Dr. Kennedy was at this time out of town; and Sir Henry Marsh saw the case with me. Opium was now administered freely, one grain of solid opium being given every second hour for some hours; and fomentations were repeated, followed by a blister and brandy. She gradually obtained relief, improved in health, but always experienced more or less sense of uneasiness and weight in the right iliac region. I discontinued my attendance on November 7th; but was subsequently informed that she had quickened. I was called to see her on November 26th; and, on examination with the stethoscope, detected in the right iliac region, which felt full, a distinct placental *souffle*. I did not visit her for nearly four months from that time, and was again called to see her in March, 1847, when she suffered great distress from pressure, and, as she termed it, a bursting feeling at intervals. I now sought for the sounds of the fetal heart, but always in vain. A bandage and mild aperients afforded relief; and, on April 25, 1847, I was summoned by the nurse-tender then in attendance upon her, who supposed her in labour. She stated that she had been all night complaining; and added that, as the pains continued, she thought it well I should know. The pains subsided, and the threatening went off for ten days, when, in consequence of the pain returning, with uterine discharge, I was suddenly summoned, and immediately asked for a consultation with Dr. Kennedy."

Here Dr. Dwyer's report terminates; and I shall now state the rest of her case in its early stage, with which I am myself familiar.

On a close investigation of her case, we satisfied ourselves that the os uteri was patulous. The neck was not obliterated. A resisting fulness was felt at the upper part of the vagina, pressing on its upper floor, and more perceptible at the right side of the uterus; the neck of which was traceable and but little enlarged, beyond what would be the case if unimpregnated. It was pushed over to the left side. A steel-sound was introduced by me into the os uteri and passed up for upwards of three inches; and Dr. Dwyer could distinctly feel the point of the sound pressing up the fundus of the uterus against his fingers placed above the pubes. We now arrived at the conclusion that the case was one of extra-uterine pregnancy, most likely of that form in which the ovum had rested low in the Fallopian tube, close to the wall of the uterus; and further, as the pains had yielded under treatment, principally sedatives, and as there was no indication of internal hemorrhage, at least to any serious extent, from the rupture of the cyst (if this had taken place) we determined that no more decided interference was then called for. We informed the patient's friends of our

opinion; and endeavoured to reconcile them to the idea that, at some future time, nature would assist in accomplishing the throwing off the fœtus, by abscess pointing in the vagina, or elsewhere; when assistance could be rendered more safely than by attempting any operation at the moment. This opinion was very unpalatable to the friends, and so ungraciously received, that we were relieved from further attendance upon the case, and the lady placed herself under the care of an eminent physician, since dead, who arrived at conclusions different from what Dr. Dwyer and I had done as to the nature of the case. What these were, we never could exactly ascertain: further than that, in his opinion (an opinion I feel bound to say, with justice, highly thought of in the profession), the lady "was not—nor had she been—pregnant, and consequently did not carry about a dead fœtus."

Eighteen years passed over. The lady, I have been informed, continued in a complaining state, but was able to go about, and did not evince much appearance of delicacy. She was said to have suffered from general debility, and, for several years, from a profuse menstrual discharge, as well as from rather constant sanious—purulent or leucorrhœal—discharges. These symptoms, and her general delicacy, ascribed in a great measure to the mistake which her physicians had made in pronouncing her pregnant when not so, and treating her accordingly, caused much interest to be taken in her, both within and without the profession, especially when this lady's case came upon the *tapis* between mutual friends. It should operate as a warning to the younger members of the profession, who pride themselves upon an astute diagnosis. For eighteen long years, we reaped the full benefit of ours before the mystery was elucidated; and the only answer the two doctors could give to the repeated attacks and insinuations about the error they had committed, was "*wail!*" But, happily for the sake of science and truth, the mystery was eventually cleared up, and happily for the doctors they survived its elucidation. Some months since Dr. Churchill and Dr. Butcher were called to see this lady; and I shall best conclude the case by giving Dr. Churchill's account of the result in his own words.

"I was called to see Mrs. —, in a state of debility, worn out with discharges from the vagina of long standing; and, on examining *per vaginam*, I found behind the cervix uteri, and a little to the right of the mesian line, a small opening as large as a goose-quill, into which the finger-nail entered, and grated against a hard substance, which was concluded to be bone. Higher up, a small tumour could be felt in the posterior wall of the uterus. On consultation with Dr. Butcher, this opening was enlarged by me; and Dr. Butcher removed the bones of a fœtus in detached portions denuded of soft parts, and much discoloured, indicating development to about the third month. Some bones were subsequently expelled with the discharges; and the cavity, on being examined by me, seemed to be large enough to contain a good sized walnut. Her health improved immediately after the healing of the abscess, which was speedily accomplished, and her periodic health became regular and moderate, with total subsidence of sanious and leucorrhœal discharges, to which she had been, for eighteen years more or less liable."

The question that remains an open one in this case is, whether any rupture of the cyst occurred; and, if it did, at what period of the pregnancy? If rupture occurred, it must have been almost the 25th of October, when the acute abdominal suffering occurred, for which Sir Henry Marsh and Dr. Dwyer treated her; but she evinced no symptoms of internal hemorrhage: therefore, if the rupture occurred, no serious amount of blood could have made its way into the abdomen. The absence of any increased size or tumour in the abdomen further confirms there having been no hemorrhage in this, as was the case in the two preceding cases. Another feature of interest, that creates a doubt as to the exact period at which the development of the germ ceased, is the fact of Dr. Dwyer having detected the placental murmur exactly a month after the occasion of the violent pains on the 25th of October. It will, no doubt, be in the recollection of my hearers, that, in the year 1833, I put forward some cases of murmur existing after the death of the fœtus, but altered and more abrupt in its character; and this may probably have been the case here.

59. *Treatment of Placenta Prævia.*—Dr. FLUCK, of Niederselters, speaking of the various methods of dealing with the hemorrhage of placenta prævia (*Der Praktische Arzt*, October), contrasts the merits of the plan of plugging the vagina with those of injecting dilute perchloride of iron, much to the advantage of the latter. The latter method, he says, has the advantage of checking the bleeding promptly, without interposing any obstacle to the frequent examination of the os uteri and of the placenta, which is of the greatest importance. Fluck uses cold water for the injection, and adds the chloride of iron in such proportion as to make a mixture of a greenish yellow-brown colour; the operation is performed gently and with pains, so as to avoid penetration into the cavity of the uterus. It is used just sufficiently long to arrest distinct hemorrhage, and is repeated before each operative interference; ergot is also given internally; and the uterus, when emptied, is steadily compressed with the hand from without. His plan is to rupture the membranes as soon as may be after arresting the hemorrhage. He relates five cases thus treated, all the women being multiparæ. In four of these the mother was saved; in one the mother died from intra-uterine hemorrhage, with great distension of the womb, after the delivery of the child and the placenta (the fœtus had been long dead, and was decomposed). In one other case the fœtus was also putrid; in a third it was born alive, though extremely *anæmic*. In the other two the child was born dead, and apparently had died from anæmia at some stage of the labour. On the whole, these results do not appear very encouraging as regards the life of the child, judging from the three cases in which the child had apparently not died before labour commenced; and one wonders if the author has tried Dr. Barnes' plan of partial separation of the placenta from the uterus. Another thing in Dr. Fluck's narration which is calculated to surprise an English physician is the sparing use, or almost non-use, of alcoholic stimulation under the circumstances of exhaustion, in which more than one of his patients obviously was. More particularly in the case which terminated fatally, one is amazed that Dr. Fluck should have trusted to "strong coffee and ether," when the most strenuous manipulation had been found necessary, in order to effect the delivery of the dead and putrid child, and the woman was exhausted in the extreme. One would think this was just one of the cases in which the prompt administration of unlimited raw brandy would have been likely to save life.—*The Practitioner*, January, 1869.

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60. *Simple Mode of performing Artificial Respiration in Asphyxiated Children.*—Dr. C. HANDFIELD JONES communicates to *The Practitioner* (March 1869) the following statement:—

"During my presence at a confinement (in my own house) the child was born with several turns of the cord round its neck, and after it was released from these it lay with a swollen, livid face, and no attempt at respiration. As soon as possible I laid it down on its back, and made pressure on its abdomen; then raised it upright on its seat; again laid it down and pressed the abdomen; again raised it upright, and so on. In the recumbent position the diaphragm was, of course, pushed upwards and expiration was imitated; in the sitting erect position the weight of the liver and abdominal viscera drew the muscles down, and inspiration was accomplished. The efficacy of the procedure was evinced in a very short time by the young gentleman making such vigorous use of his lungs that his cry was distinctly heard on the second floor below where he was. I do not think Dr. Marshall Hall's or Dr. Silvester's method could have answered better. Perhaps some practitioner may think it worth while to make a trial of this method."

## AMERICAN INTELLIGENCE.

## ORIGINAL COMMUNICATIONS.

*Two Cases of Trichiniasis observed at the Philadelphia Hospital, Blockley.* Reported by J. STROCKTON HOGG, M. D., Resident Physician Philadelphia Hospital.

CASE I.—Mrs. M. L., æt. 28, native of Ireland, widow, of temperate habits, was admitted to the Philadelphia Hospital July 16th, 1868. At the time of her admission she had phthisis pulmonalis, of which she died, January 16th, 1869. Soon after her admission she was attacked with pains in her limbs, and especially in her arms, which continued unabated, despite of treatment, until her death. The real cause of these pains was not suspected during her life. I did not see her until the autopsy was made, and the only information I could obtain of her previous history was from the nurse, who stated that the patient was accustomed to receive visits from her friends, who almost invariably brought her *ham* and Bologna sausage, of which she ate *ravenously*.

*Post-mortem.*—There was a large cavity in apex of left lung, and far advanced tubercle in the apex of the right, with adhesions of parts of almost all the serous surfaces of the visceral organs. Tuberculous ulcers were found in the large intestines. She had a constant diarrhœa from her admission up to the time of her death. On opening the chest, my attention was attracted to a condition of the pectoral muscles, which seemed to be abnormal. On closer examination, calcareous points were noticed in them; but observing that they were symmetrical in form, and all of about the same size, I concluded that they must be organized. The cysts, on being subjected to microscopical examination, were found to be lemon-shaped, and opaque. On breaking one open, I found a *trichina spiralis*. These cysts are from  $\frac{1}{75}$  to  $\frac{1}{50}$  of an inch long, with a transverse diameter of about half as great as the length, and firm from calcareous degeneration. By treating the opaque cyst with a drop of dilute chlorohydric acid the carbonate of lime is decomposed, and the larval trichina is seen coiled up in various styles. The larval trichina is about  $\frac{1}{33}$  of an inch long, by about  $\frac{1}{50}$  of an inch in transverse diameter. Some cysts contained two worms; all were encysted. The cadaver measured 5 feet 2 inches in length, and weighed 60 lbs. The muscle alone is estimated to weigh 24 lbs. From these data, counting the number in one grain of muscle, the whole number of cysts were estimated to be about 8,000,000. All the organs were closely examined, but no entozoa were found in any of them. There were a few in the diaphragm, but none in the heart.

This is the first case that has ever been detected in this hospital, and, so far as I can learn, the first that has ever been reported as occurring in Philadelphia.

CASE II.—T. McC., æt. 42, native of Ireland, of intemperate habits, and by occupation a labourer, was admitted to the Philadelphia Hospital March 19th, 1866, where he was treated in the medical ward for rheumatism, of which he was cured, and discharged April 4th, 1866.

He was readmitted to the hospital October 18th, 1867, and treated for necrosis of superior maxillary bone, in the surgical ward, from which he was discharged January 1st, 1868.

Again he was readmitted, November 5th, 1868, labouring under an attack of chronic diarrhœa. For this latter affection he used various astringents, with only temporary benefit. At times he seemed to be improving, but again relapsed, and finally died February 2d, 1869.

*Post-mortem.*—The liver was fatty, the heart very small. The large intestines were not ulcerated, but contained numerous pedicellate mucous projections of a dark colour. The cæcum had the appearance of recent inflammation. Encysted trichinæ were found in the muscles, especially those of the chest and abdomen. In this case the entire number of trichinæ estimated to exist in the muscles did not, probably, exceed a few thousand.

The muscles of this patient were quite natural in colour, while in the other case they were very pale. The patient was greatly emaciated, as in the previous case.

[Such of our readers as desire full information in regard to the natural history of *Trichina Spiralis*, and the disease to which it gives rise, are referred to the admirable papers by Dr. WM. KELLER and Dr. JOHN D. JACKSON, the former in the No. of this Journal for April, 1864, p. 352 *et seq.*, and the latter in the No. for January, 1867, p. 82 *et seq.* The latter paper is illustrated with woodcuts, showing the parasite in its various stages of development. We may also refer for accounts of several epidemics of Trichiniasis to the following Nos. of this Journal: Oct. 1860, p. 538; July, 1864, p. 226; and April, 1866, p. 531.]

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*Case of Trismus caused by a Carious Tooth.* By A. REEVES JACKSON, M. D., of Stroudsburg, Pa.

Maria L., aged 28 years, called upon me, in company with her husband, and gave the following history:—

Five weeks ago she commenced suffering pain, which she referred to the wisdom tooth, in the left side of the lower jaw. The same tooth had frequently been the seat of pain during the past five years. The pain decreased in severity after the first few days; but she noticed a difficulty in opening the jaws, which gradually increased, and at the end of three weeks she could not separate them at all. When she made a strong effort to open her mouth, the attempt, if in any degree successful, was followed by a sudden snapping of the teeth together. Occasionally these spasmodic actions were observed without any attempt having been made to open the mouth; but they were infrequent, and of short duration. The general health of the patient was good.

On examination, I found the trismus complete, and any attempt to separate the jaws was followed by sudden spasm and pain. Inserting a finger between the cheek and the gum, I observed that the least pressure over the diseased tooth produced pain, although it did not excite any spasm. A painful spot was detected also just in front of the left ear, at which point there was some swelling.

I administered, by inhalation, a mixture of ether and chloroform until sufficient relaxation of the muscles was produced to permit the extraction of the tooth, which was accomplished with some difficulty. A few spasmodic movements of the jaws were observed during the next two days; but they diminished in frequency and violence, and soon disappeared entirely.

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*Carbolic Acid as a Local Application in the Treatment of Syphilis and Syphilitic Warts.* By HENRY L. BURTON, M. D., Somerville, Tenn.

In November, 1868, a case of syphilis came under my treatment, and I determined to try, as a local application, the carbolic acid, of which so much has recently been published in various journals.



There were several well-developed chancres, and some enlargement of the inguinal glands. After having had the parts thoroughly cleansed, the chancres were freely touched with crystallized carbolic acid, and lint, saturated with a solution of two grains of the acid to the ounce of water, ordered as a constant application. The canterization with the crystals was repeated twice, at intervals of three days, when the chancres assumed a healthy appearance, and soon healed.

The ordinary constitutional treatment was employed.

In June, 1868, a negro man came suffering severely with syphilis and complete phymosis. The disease had run on for some time without treatment, and the patient was so situated that he could not conveniently submit to an operation for the phymosis, and during the whole course of treatment adopted he never lost a day from his ordinary labour on the farm, notwithstanding one bubo had to be lanced in the meantime.

He was put upon the usual constitutional remedies, and the disease treated locally with astringent injections. On the 1st of August he was dismissed, apparently cured.

On the 1st of January, 1869, he came to inform me that he had some "little lumps" on his penis, and on examination I found the glans and the prepuce literally covered with a mass of syphilitic warts, ranging in size from a bird-shot to that of a garden pea. As he would not consent to excision, the warts were freely touched with crystallized carbolic acid, and after the second application the smaller warts disappeared, leaving a healthy surface. I had reason to believe that the larger ones would also disappear under the treatment, but unfortunately the patient himself disappeared from the neighbourhood, without giving me an opportunity to witness the result.

I believe this acid will be found equal to other caustics in the treatment of such cases.

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#### DOMESTIC SUMMARY.

*Sclerosis of both Third Anterior Frontal Convolution without Aphasia.*—Dr. M. GONZALEZ ECHEVERRIA relates (*Medical Record*, March 1, 1869) an interesting case of a man *æt.* 67, who from youth was subject to epilepsy, and who for months before his death experienced dizziness when attempting to walk, with difficulty in moving or protruding his tongue. He died suddenly while straining at stool, in consequence, as the post-mortem showed, of rupture of an aneurism of the right vertebral artery, near its junction with the left to form the basilar trunk. The left artery was equally distended; a clot, plugging the calibre of both vessels at their fusion, being the cause of the aneurismal dilatation. There was also sclerosis of the brain, medulla oblongata, and spinal cord; also degeneration of the ganglia and nerves, connected with an herpetic eruption on the chest.

Dr. E. observes: "It is worthy of note that, with the above local disorganization of the spinal gray substance, the patient did not complain of anesthesia in any of the limbs. The case distinctly shows that lesion of the third left frontal convolution may occur without any loss or defect of speech, as already substantiated by other instances; finally, this rare example of hæmorrhachis and aneurism in both vertebral arteries also confirms the manner in which the dilatation may be occasioned by plugging of the vessel, as first explained by Dr. J. W. Ogle."

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*Sulphite of Soda and Sulphite of Ammonia in Intermittent Fever.*—Dr. W. J. CHANDLER reports (*Medical Record*, March 1, 1869) twenty cases of inter-

mittent fever treated in the service of Dr. Austin Flint, at Bellevue Hospital, with the sulphite of soda and the sulphite of ammonia.

The following are the conclusions which he draws from these cases:—

"1st. That in a few cases the paroxysms of intermittent fever are relieved, and possibly arrested, by the sulphite of soda or sulphite of ammonia.

"2d. That in the large majority of cases these remedies fail entirely to arrest the paroxysms, or to lessen either their severity or frequency.

"3d. That these remedies require to be given in large doses for a length of time to effect any appreciable improvement.

"4th. That, when given in doses sufficient to modify or arrest the paroxysms, they produce considerable irritation of the stomach and intestinal canal.

"5th. That as remedies for intermittent fever they are in every respect vastly inferior to quinia."

—

*Infusion of the Leaves of the Chestnut (Castanea Vesca) in Hooping-cough.*

—Dr. J. LUDLOW, of Cincinnati, states (*Cincinnati Lancet and Observer*, March, 1869) that he has used, at the suggestion of Dr. UNZICKER, the infusion of the leaves of the chestnut for the relief of the spasm in pertussis, and found it eminently efficacious. "I have found," he says, "in all cases that it would, in from five to ten days, relieve the spasm, and in about two weeks cure it; and the little sufferer would hoop no more, but go on to a speedy recovery, to the great delight of myself and its friends.

"I make an infusion of the leaves, by taking one-half of an ounce of them to the pint of boiling water, and afterward add to this a pint of cold water, to which is added sufficient of white sugar to make it palatable to the patient, and give of this, *cold*, as much as I can get the patient to take during the day and evening. Giving it to drink in place of cold water, the child soon gets to like it, and I have no trouble in getting a sufficient quantity taken to produce the desired result. This remedy I believe of such importance, that I would urge it upon the attention of the profession at large."

—

*Distal Operation for the Cure of Aneurism of the Innominata.*—Dr. HENRY B. SANDS records (*Medical Record*, Feb. 1, 1869) the case of a woman, æt. 43, admitted into Bellevue Hospital with an aneurism of the innominata. A soft, pulsating tumour existed at the root of the neck and behind the right sterno-clavicular joint, the bones composing which had evidently undergone partial absorption. The external swelling rose about two inches above the clavicle, and extended from a point a little to the left of the median line, to the clavicular portion of the right sterno-mastoid muscle, the sternal portion of the latter being stretched over its anterior surface. It could be most distinctly felt where it lay in contact with the front and right side of the trachea; and in these situations, as well as opposite to the sterno-clavicular articulation, the pulsation could be both seen and felt. On auscultation, a double murmur was heard not only over the tumour, but also over the præcordial region; and it was difficult to decide whether this depended on the aneurismal disease, or on coincident disease of the valves of the heart. The diastolic murmur, however, was heard with greatest intensity at the junction of the fourth costal cartilage with the left side of the sternum; and the observations made with the sphygmograph by my friend Dr. Draper, are thought by him to indicate the presence of aortic regurgitation.

After reflecting upon the best course to pursue, I decided to tie the common carotid artery above the tumour, and at the same time, also, the subclavian artery, in the third part of its course. I performed this operation, with the consent and assistance of my colleagues, on the 16th of July last. Ether was administered, and the carotid artery secured at the point of election, just above the omo-hyoid muscle. The subclavian was reached by a single straight incision, made a little above the clavicle. The vessel was easily found and secured. I passed the aneurism needle from above downward, to avoid including one of the cords of the brachial plexus, which overlay the artery. Both the carotid and subclavian arteries appeared healthy at the points where the ligatures were applied. When the latter were tightened, no sensible change was observed,

either in the size or pulsation of the tumour. The wounds were closed by silver sutures, and covered by small compresses of lint retained in place by strips of adhesive plaster.

After the operation, the progress of the case was, in many respects, entirely satisfactory. The pupils, which had been contracted previously, now regained their normal size. The radial pulse soon returned on the right side, and I could feel it distinctly, though very faintly, on the day after the operation. The superficial wounds both healed by adhesion, and I was obliged on the third day to open that over the subclavian, in order to allow the escape of a small quantity of accumulated pus. Very decided relief from dyspnoea was at once observed, and this improvement still continues. The ligature on the subclavian came away on the 19th, and that on the carotid on the 23d, day. On the 42d day, bleeding, to the extent of about ten ounces, took place from the carotid. It seemed to have been brought on by a fit of excitement, the patient having been allowed to get intoxicated. The bleeding recurred once only, on the 48th day, and was trifling in amount. Digital compression was kept up steadily from August 27th, the date of the first hemorrhage, until September 10th, at which time it was discontinued. The patient then progressed favourably, and the wounds were healed about the middle of September.

The tumour diminished in size after the operation, and visible pulsation ceased. Its contents also became somewhat firmer, although there has never been any very great change in this respect. In consequence of the delay in the process of consolidation, attempts have been made to hasten it, by the internal administration of veratrum viride, acetate of lead, the digitalis, and by the external application of ice to the tumour. These remedies have all been tried, at various times, since the operation, but have produced no material change in the size or pulsation of the tumour. In short, the disease evidently remains, although the signs of improvement are unmistakable.

This case is followed by some remarks on the distal operation, with tables of the cases in which it has been performed, and he concludes by the inquiry whether the operation to be performed should be repeated? In this he says: "I am not prepared to give a definite answer. The chances of success, however, are so slight, and the danger of the operation so great, that unless the tumour were very small, and the immediate symptoms very urgent, I should hesitate to recommend it.

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*Amputation at the Hip-Joint; Recovery.*—A case of this is recorded (*Pacific Med. and Surg. Journ.*, Dec. 1868) by Dr. T. D. JOHNSON, of San Jose. The subject was a man who had, two days before seen by Dr. J., been shot with a Colt's revolver; the ball penetrated the hip at the superior portion of the trochanter major, passing down the medullary cavity to near the knee-joint, completely destroying the entire shaft of the bone and making it necessary to amputate.

Assisted by Dr. McDougal this was performed. The flaps were formed antero-posteriorly; the arteries were secured without the loss of one pint of blood; the amount of chloroform administered was six drachms; a great portion of the stump healed by first intention. The patient recovered rapidly after the first ten days for about two weeks, when he was accidentally poisoned, through a mistake of the nurse in giving a large portion of volatile liniment in place of castor oil emulsion. This retarded his recovery considerably, but in three months he was entirely well, and is still living, and resides at the New Almaden mine, in Santa Clara County.

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*Glycogenic Function of the Liver.*—Dr. AUSTIN FLINT, Jr., records (*N. Y. Med. Journal*, Jan. 1869) some experiments undertaken by him for the purpose of reconciling the discordant opinions maintained by C. Bernard and Dr. Pavy in regard to the glycogenic functions of the liver.

"Although these experiments," he remarks, "are not entirely new, my interpretation of them serves to harmonize, in my own mind at least, the results obtained by Bernard and by Pavy:—

1. A substance exists in the healthy liver, which is capable of being con-

verted into sugar; and inasmuch as this is formed into sugar during life, the sugar being washed away by the blood passing through the liver, it is perfectly proper to call it glycogenic, or sugar-forming, matter.

"2. The liver has a glycogenic function, which consists in the constant formation of sugar out of the glycogenic matter, this sugar being carried away by the blood of the hepatic veins, which always contain a certain proportion of sugar, and subserving some purpose in the economy connected with nutrition, as yet imperfectly understood. This production of sugar takes place in the carnivora as well as in those animals that take sugar and starch as food; and is essentially independent of the kind of food taken.

"3. During life, the liver contains only the glycogenic matter, and no sugar, because the great mass of blood which is constantly passing through this organ washes out the sugar as fast as it is formed; but after death, or when the circulation is interfered with, the transformation of glycogenic matter into sugar goes on; the sugar is not removed under these conditions, and can then be detected in the substance of the liver."

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*Dislocation of the Crystalline Lens.*—Dr. R. P. DAVIS records (*St. Louis Med. and Surg. Journ.*, Jan. 1869) a case of this which is very remarkable for the presence of the lens in the anterior chamber not causing any inflammation, and the complete subsequent absorption of the lens:—

M., aged 19, on the 7th April, 1865, whilst standing near and at right angles to a tree, so as to watch the mark at which a friend was shooting, immediately on the first shot being fired fell to the ground, and experienced the most excruciating pain in the right eye. After recovering from the shock he discovered the loss of sight in the right eye. On the 8th, the day following, he reported to me (having travelled twenty miles), when, upon an examination of the eye, the lens was found lying in the lower part of the anterior chamber, against the cornea, nearly shutting from sight the pupil—the pupil remaining about its natural size, the eye otherwise looking healthy, and no signs of external injury. I insisted upon an operation to remove the lens, explaining to him the danger in allowing it to remain so; but he positively refused; whereupon I ordered him a brisk cathartic, and advised the free application of cold water to the parts. The same day he returned home. I heard nothing from him until March 20, 1866, when he again called to see me. Upon an examination of the eye, I found the lens entirely absorbed, and the eye in a healthy condition, the pupil remaining slightly dilated. I furnished him with a cataract glass, by which he was enabled to see as well as any one with the loss of the lens. He had suffered but little pain after he left me, and would not have been cognizant of any injury having been sustained, had it not been for the loss of sight.

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*Postural Treatment of Fifteen Cases of Prolapsed Funis.*—Dr. M. YARNALL states (*Medical Archives*, March, 1869) that in fifteen cases of prolapsus of the umbilical cord, occurring in the practice of Dr. T. L. Papin, of St. Louis, reduction was effected by placing the patient on her elbows and knees. In the position recently advocated by Dr. Gaillard Thomas, of New York. "Of the fifteen cases, ten were born alive and did well; of the five remaining cases, all of whom died, one died from subsequent compression of the cord with the forceps after the cord had been successfully returned; in another the cord was completely severed with the same instruments; one died from the too free administration of ergot, and the remaining two were cases in which the children were in the transverse position, and no retaining of the cord was possible, as there was no engaging portion of the child to keep it up, and by the time the uterus was sufficiently dilated to turn and deliver, the children were dead.

"In every case here reported the cord was fully prolapsed, being in some entirely out of the vagina, and in several it was extraordinarily long and large. In two instances I witnessed the operation, Dr. Papin being at the time my preceptor, and I know several of the children, who are now living in this city."

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DISEASES OF THE EYE.—Lectures upon the Anatomy, Physiology, and Diseases of the Eye, by George C. Harlan, M. D.

URINARY DEPOSITS AND TESTS.—Students will be instructed in the microscopical and chemical examination of the urine, and will be enabled to make themselves familiar with the necessary manipulations, by James H. Hutchinson, M. D.

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WINTER COURSE OF EXAMINATIONS will begin with the Lectures at the University of Pennsylvania in October, and will continue till the close of the session.

Candidates for admission to the Army and Navy, and those desiring promotion to a higher grade, may obtain private instruction.

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## MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, CHARLESTON, SOUTH CAROLINA.

### PROFESSORS.

The Forty-First Course of Lectures in this Institution will commence on Monday the 1st of November, 1869, and be continued until the 1st of March following.

J. E. HOLBROOK, M. D., Emeritus Professor of Anatomy.

E. GEDDINGS, M. D., Professor of the Institutes and Practice of Medicine.

R. A. KINLOCH, M. D., Professor of Surgery.

F. M. ROBERTSON, M. D., Professor of Obstetrics and Diseases of Women and Children.

J. P. CHAZAL, M. D., Prof. of General Pathology, Pathological Anatomy and Hygiene.

MIDDLETON MICHEL, M. D., Professor of General Anatomy and Physiology.

GEORGE E. TRESCOT, M. D., Professor of Materia Medica and Therapeutics.

C. U. SHEPARD, M. D., Professor of Chemistry.

F. L. PARKER, M. D., Demonstrator of Anatomy and Lecturer on Special Anatomy.

W. H. BAILEY, M. D., Assistant Demonstrator of Anatomy.

The regular Professors will be assisted by the usual number of Supplementary Professors.

Clinical Lectures will be delivered at the City Hospital, by the Professors of Practice, Surgery and Obstetrics, and Diseases of Women and Children, to which the students will be admitted free of charge.

*Expenses of the School.*—Matriculation Fee (paid once), \$5 00; Entire Course of Lectures, \$105 00; Demonstrator's Ticket, \$10 00; Graduation Fee, \$30 00.

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Good board can be obtained at as low a rate as in any city in the United States. Further information can be obtained by addressing the Dean or either of the Professors.

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Prof. HORATIO R. STORER will deliver his fifth private course of twelve lectures on the

#### TREATMENT OF THE SURGICAL DISEASES OF WOMEN,

during the first fortnight of June, with illustrative operative instruction at the Franciscan Hospital for Women, under his charge.

Fee \$50, and Diploma required to be shown. Certificates of attendance upon the previous courses have now been issued to thirty-five gentlemen in different parts of the country.

HOTEL PELHAM, BOSTON, February, 1869.

### PHILADELPHIA SCHOOL OF ANATOMY,

*Chant Street, Tenth Street above Chestnut, rear of St. Stephen's Church.*

The SUMMER COURSE at the Philadelphia School of Anatomy will begin on Tuesday, April 6, 1869, and will continue till the middle of October, with a recess in July and August.

A Systematic Course of Lectures on Descriptive and Surgical Anatomy will be delivered on Mondays, Thursdays, and Fridays, at 2½ o'clock P. M., illustrated by Dissections, Models, Drawings, &c. The Microscopic Anatomy of the various tissues will be shown by the Class Microscope.

Dissection will be carried on under the direct and personal supervision of the Assistant Demonstrators of Anatomy, with an abundant supply of material.

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Fee for the Course \$10.

In connection with the institution there will be delivered also during the Summer the following additional courses:—

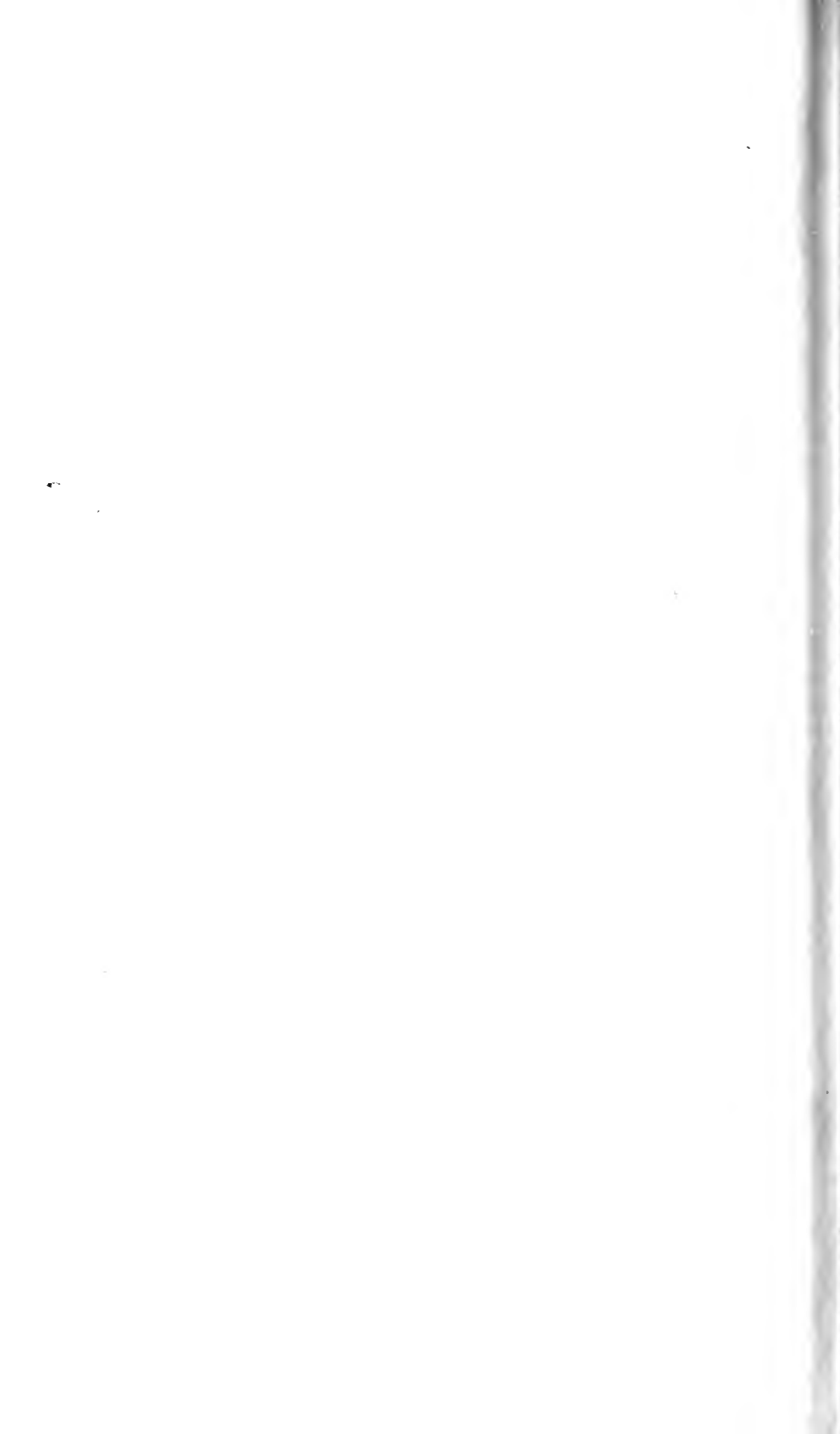
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